

Y-ANR
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AN EVALUATION OF POTENTIAL ANR
COMMERCIAL DATA PROCESSING
SERVICES AND PRODUCTS

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ABOUT INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out consulting research. Working closely with clients on important issues, INPUT's staff members interpret the research data, make recommendations and innovative solutions to meet clients' needs. Clients receive regular access to data on which an ongoing continuous consulting.

Many of INPUT's professional staff members have nearly 20 years experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading consulting firm. Clients include Fortune's largest and most technologically advanced companies.

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An Evaluation of Potential ANR
Commercial Data Processing

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AN EVALUATION OF POTENTIAL ANR
COMMERCIAL DATA PROCESSING SERVICES AND PRODUCTS

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MARCH 1981

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TABLE OF CONTENTS

		<u>Page</u>
I	INTRODUCTION	I
II	MANAGEMENT SUMMARY	3
III	METHODOLOGY	7
	A. Evaluation Of Potential Products	7
	B. Research Into Marketability	8
IV	EVALUATION OF POTENTIAL PRODUCTS/SERVICES	11
	A. Pipeline Simulation Model	19
	1. Current Use/Status	19
	2. Commercial Offering	20
	3. Completeness	20
	4. Readiness	21
	5. Uniqueness	21
	6. Marketing Synergy	21
	7. Market Potential	22
	B. Environmental Data Reporting	22
	1. Current Use/Status	22
	2. Commercial Offering	22
	3. Completeness	23
	4. Readiness	23
	5. Uniqueness	23
	6. Marketing Synergy	23
	7. Market Potential	24
	C. Environmental (Air Permit) Consulting	24
	1. Current Status	24
	2. Commercial Offering	25
	3. Completeness	25
	4. Readiness	25
	5. Uniqueness	25
	6. Marketing Synergy	25
	7. Market Potential	27

	<u>Page</u>
D. Truck Freight Model	26
1. Current Use/Status	26
2. Commercial Offering	27
3. Completeness	27
4. Readiness	27
5. Uniqueness	28
6. Marketing Synergy	28
7. Market Potential	28
E. Other Transportation Modeling	28
1. Current Use/Status	28
2. Commercial Offering	29
3. Completeness	29
4. Readiness	29
5. Uniqueness	29
6. Marketing Synergy	29
7. Market Potential	30
F. Blind Bidding Model	30
1. Current Use/Status	30
2. Commercial Offering	30
3. Completeness	30
4. Readiness	30
5. Uniqueness	31
6. Marketing Synergy	31
7. Market Potential	32
G. Management Science Consulting	32
1. Current Use/Status	32
2. Commercial Offering	33
3. Completeness	33
4. Readiness	33
5. Uniqueness	33
6. Marketing Synergy	33
7. Market Potential	34
H. Geological Data Base (Specialized Timesharing Service)	34
1. Current Use/Status	34
2. Commercial Offering	34
3. Completeness, Readiness, Uniqueness	35
4. Marketing Synergy	35
5. Market Potential	35
I. Financial Modeling Consulting And Software	35
1. Current Use/Status	35
2. Commercial Offering	36
3. Completeness	36
4. Readiness	36
5. Uniqueness	37
6. Marketing Synergy	37
7. Market Potential	37

	<u>Page</u>
J. Coal Lease Reporting	37
1. Current Use/Status	37
2. Commercial Offering	38
3. Completeness	38
4. Readiness	38
5. Uniqueness	38
6. Marketing Synergy	39
7. Market Potential	39
K. General Business And Scientific Timesharing	39
1. Current Use/Status	39
2. Commercial Offering	40
3. Completeness	40
4. Readiness	41
5. Uniqueness	41
6. Marketing Synergy	41
7. Market Potential	42
L. Computer Time Sales	42
1. Current Use/Status	42
2. Commercial Offering	42
3. Completeness	42
4. Readiness	43
5. Uniqueness	43
6. Marketing Synergy	43
7. Market Potential	44
M. Capacity Planning Software	44
1. Current Use/Status	44
2. Commercial Offering	45
3. Completeness	45
4. Readiness	45
5. Uniqueness	45
6. Marketing Synergy	46
7. Market Potential	46
N. Computer Move Consulting	46
1. Current Use/Status	46
2. Commercial Offering	47
3. Completeness	47
4. Readiness	47
5. Uniqueness	47
6. Marketing Synergy	47
7. Market Potential	48
O. Data Processing Education	48
1. Current Use/Status	48
2. Commercial Offering	48
3. Completeness	48
4. Readiness	48
5. Uniqueness	48
6. Marketing Synergy	49
7. Market Potential	49

	<u>Page</u>
P. Bulk Printing/Microfiche Production	49
1. Current Use/Status	49
2. Commercial Offering	49
3. Completeness	50
4. Readiness	50
5. Uniqueness	50
6. Marketing Synergy	50
7. Market Potential	50
Q. Facilities Management	50
1. Current Use/Status	50
2. Commercial Offering	51
3. Completeness	51
4. Readiness	51
5. Uniqueness	51
6. Marketing Synergy	51
7. Market Potential	52
R. Boardroom Graphics	52
1. Current Use/Status	52
2. Commercial Offering	53
3. Completeness And Readiness	53
4. Uniqueness	53
5. Marketing Synergy	53
6. Market Potential	53
S. Executive Information System	53
1. Current Use/Status	53
2. Commercial Offering	54
3. Completeness And Readiness	54
4. Uniqueness	54
5. Marketing Synergy	54
6. Market Potential	54
T. Contract Programming Services	54
1. Current Use/Status	54
2. Commercial Offering	54
3. Completeness	55
4. Readiness	55
5. Uniqueness	55
6. Marketing Synergy	55
7. Market Potential	55
U. In-House Timesharing Consulting	56
1. Current Use/Status	56
2. Commercial Offering	56
3. Completeness	57
4. Readiness	57
5. Uniqueness	57
6. Marketing Synergy	57
7. Market Potential	57

	<u>Page</u>
V POTENTIAL PRODUCTS: SUMMARY AND RECOMMENDATIONS	59
A. Summary	59
B. Detailed Recommendations For Further Action On Potential Products And Services	63
1. Present Seminars	64
2. Potential Seminar Presentations	65
3. No Action Recommended	66
4. Obtain More Information	67
5. If Marketed, Proceed Using Local Initiative	68
6. Market Research Recommended	69
VI MARKET STUDIES OF THREE PRODUCTS	71
A. Capacity Planning Software	71
1. Current Use/Status	71
2. Future Trends	76
3. Market Entry	79
4. Conclusions	86
B. Commercial Timesharing Services	89
1. Current Product Structure	89
2. Current Status And Trends	90
3. Competitive Environment	94
4. Conclusions	98
C. Financial Planning Consulting And Software	101
1. Current Use/Status	101
2. Future Trends	110
3. Competitive Environment	110
4. Products Competing With ANR's Proposed Service	114
5. Market Entry	117
6. Conclusions	118
VII MARKET ENTRY: RECOMMENDATIONS	121
A. Summary	121
B. Recommendations	126
APPENDIX A: ANR INTERVIEWS	129
APPENDIX B: INTERVIEW GUIDE - ANR USERS OF SERVICES	131
APPENDIX C: CAPACITY PLANNING: USER QUESTIONNAIRE	141
APPENDIX D: CAPACITY PLANNING VENDORS INTERVIEWED	155
APPENDIX E: CAPACITY PLANNING: VENDOR QUESTIONNAIRE	157
APPENDIX F: USER QUESTIONNAIRE: TIMESHARING	167
APPENDIX G: FINANCIAL PLANNING: USER QUESTIONNAIRE	177
APPENDIX H: FINANCIAL PLANNING SOFTWARE VENDORS INTERVIEWED	187
APPENDIX I: FINANCIAL PLANNING: VENDOR QUESTIONNAIRE	189

AN EVALUATION OF POTENTIAL ANR COMMERCIAL DATA PROCESSING SERVICES AND PRODUCTS

LIST OF EXHIBITS

			<u>Page</u>
IV	-1	Marketing Synergy Summary	14
	-2	Software Portfolios	15
V	-1	Product/Service Summary	60
	-2	Product/Service Synergy	62
VI	-1	Measurement Tools Used Per Installation	72
	-2	Concurrent Measurement Methodologies	73
	-3	Capacity Planning Tools Now Used	75
	-4	Trends Foreseen In Measurement And Capacity Planning In The Next Five Years	77
	-5	Measurement And Planning: Integration	78
	-6	Level Of Interest In Financial Optimization Model	80
	-7	Measurement Products	81
	-8	Capacity Planning Packages	84
	-9	Capacity Planning Software: Favorable And Unfavorable Factors	88
	-10	Expected Changes In Vendor Timesharing Use: 1979-1983	93
	-11	Commercial Timesharing In The Fortune 900-1,000	95
	-12	Alternative Interactive Systems In Very Large Corporations	96
	-13	General Timesharing: Favorable And Unfavorable Factors	100
	-14	Extent Of Computerization Of Financial Planning Functions	102
	-15	Changes In Extent Of Computerization In Long-Range Planning	103
	-16	Changes Foreseen In Scope Of Long-Range Planning	104
	-17	Extent Of Management Involvement In Long-Range Planning	105
	-18	Importance Of Factors In Obtaining Financial Planning Software	107
	-19	Importance Of Software Features To Users	108
	-20	Organizations That Would Seek Outside Help In Implementing Long-Range Planning Systems	109
	-21	Level Of Comfort With Different Sources Of Financial Planning Consulting And Software	111
	-22	Financial Planning: Integration	112
	-23	Segmentation Of Products And Customers	115
	-24	Competitive Products	116
	-25	Financial Planning Product: Favorable And Unfavorable Factors	119
VII	-1	Potential Business Areas: Usage/Need Factors	122
	-2	Potential Business Areas: Market Factors	123

I INTRODUCTION

I INTRODUCTION

- INPUT has been retained by ANR to assist in evaluating and selecting ANR data processing systems and/or expertise that could be offered commercially.
- The engagement (and this report) has been divided into two parts:
 - The first part evaluates potential data processing products and services from the standpoint of ANR's ability to deliver a viable commercial product. Products which appear viable but whose market acceptance is uncertain have their marketability examined in the second part.
 - Chapters IV and V of this report describe the findings of the evaluation phase.
 - The second part involves interviewing potential users (and current vendors) of three products/services identified in the first phase to determine the likely reception of a commercial offering by ANR. The second part supplies information on such issues as:
 - The extent to which customers' needs are met by existing products and services (in-house as well as vendor-supplied services and products).
 - Required product/service characteristics.

- . Potential market size.
 - . Likely acceptance of a new entrant.
 - . Strategies for market entry.
 - . Importance of price.
- In part two, the following products and services were evaluated for market acceptability:
 - Capacity planning software.
 - General timesharing services.
 - Financial planning consulting and software.
- Chapter VI of this report describes the findings of the market studies.
- Chapter VII contains recommendations on how ANR could enter the commercial marketplace.
- This report includes information presented to ANR management in January and March 1981.

II MANAGEMENT SUMMARY

II MANAGEMENT SUMMARY

- ANR has been considering offering its computer-based software and expertise to the commercial marketplace.
 - INPUT has been engaged to assist ANR in evaluating the viability of potential products and services.
- In the initial phase of the study, INPUT found the following products and services to be complete, requiring low startup costs and having commercial potential. INPUT recommended that ANR market them using a variety of specified approaches.
 - Pipeline Simulation Model.
 - Environmental Data Reporting System.
 - Environmental (Air Permit) Consulting.
 - Truck Freight Model (if released).
 - In-House Timesharing Consulting.
 - Computer Move Consulting.
 - Computer Time Sales.

- Bulk Printing/Microfiche Services.
- Data Processing Education Services.
- The second phase of the study consisted of conducting research among potential users and competitors to evaluate what the likely market response would be to three specific ANR products and services.
 - Computer capacity planning software.
 - General timesharing services.
 - Financial planning consulting and software.
- A secondary purpose was to define in what ways future product developments should be channeled to better target the products.
- INPUT's findings are as follows:
 - The capacity planning software market is growing and there is now a relatively small amount of competition.
 - ANR should move quickly to exploit what is likely to be a relatively narrow time window (2-3 years).
 - ANR should produce an initial product which does not compete directly with current market leaders.
 - However, eventually, ANR will have to expand its products' features in order to be competitive in the long term.
 - The general timesharing market is in the early stages of what promises to be a radical restructuring.

- . Hence, it would not be wise for ANR to enter this declining market.
- . However, ANR's timesharing capabilities would be well suited to be one of the ways of offering it "core" energy- and transportation-related software products.
- ANR's financial planning software has now become obsolescent as a result of a number of new products recently introduced.
 - . ANR consulting in this area would not be competitive without modern modeling software.
 - . Based on the research findings, ANR would find it very hard to compete against the services (and image) offered by specialist consulting firms and the "Big 8" accounting firms.
 - . Consequently, ANR should not make the investment required to enter this market.

III METHODOLOGY

III METHODOLOGY

- Somewhat different research approaches were taken in conducting the two parts of the study, namely:
 - The evaluation of potential products and services, and
 - The research into marketability of three products/services.

A. EVALUATION OF POTENTIAL PRODUCTS

- INPUT interviewed 19 ANR managers and technical staff members to gain an understanding of current activities so that potential commercial offerings could be assessed.
 - The original list of seven potential products/services was expanded to 21 by the end of the interview process.
 - Appendix A contains a list of interviews conducted.
- A mix of different viewpoints was obtained in the interviews.
 - Interviewees ranged from Director to Section Manager.

- Users, systems designers, support staff and operations personnel were interviewed.
- Interviews followed a basic structure, using a User Interview Guide (Appendix B) and a Product Selection Factor checklist (Appendix C). However, interviewees were encouraged to discuss whatever they believed to be important; several valuable product ideas and other insights were gained in this manner.
- Interviews were supplemented by documentation and other written materials supplied by ANR describing many of the areas investigated.
- INPUT reviewed the detailed evaluations with key Information Systems staff for factual correctness.
- Recommendations and conclusions were based on INPUT's interpretations of these facts and INPUT's judgment, based on its experience in the field.

B. RESEARCH INTO MARKETABILITY

- Capacity planning software.
 - The research effort for ANR was combined with that of a related subscription study on performance management and capacity study previously planned for mid-1981; the research for the subscription study was moved up and integrated with the ANR research.
 - Nine additional user interviews were added to the 26 previously scheduled.
 - Approximately half of all user interviews were conducted in ANR's market area.

- Purchasing decision questions were added to all interviews (see Appendix C for questionnaire).
 - Vendor interviews were doubled, from four to eight (see Appendix D for an interview list); all leading vendors were interviewed (see Appendix E for questionnaire).
- General INPUT expertise acquired in related studies was also used.
- General timesharing services.
 - Fourteen user firms were interviewed in depth (see questionnaire in Appendix F).
 - Forty-five other firms were surveyed to ascertain their use of commercial timesharing.
 - Research for an upcoming INPUT subscription study on user-site hardware and a previous subscription study on remote computing services was examined and analyzed.
 - Valuable information was obtained from other INPUT staff with recent experience in the timesharing industry.
 - Issues raised in the course of the study were informally discussed with timesharing vendors.
- Financial planning and consulting and software.
 - Fifteen user firms were interviewed in depth (see Appendix G for questionnaire).
 - Six vendors were interviewed, including four of the leading vendors (see Appendix H for an interview list and Appendix J for questionnaire).

- Research previously performed for a subscription report on financial management and control systems was reviewed and analyzed.
- Research for an upcoming INPUT subscription study on decision support system software was examined and analyzed.
- Of the 78 in-depth interviews conducted.
 - Nineteen were face-to-face interviews.
 - Fifty-nine were held on the telephone.
 - A number of the interviews involved interviewing more than one person in an organization or follow-up interviews.

IV EVALUATION OF POTENTIAL PRODUCTS/SERVICES

IV EVALUATION OF POTENTIAL PRODUCTS/SERVICES

- This chapter examines each product or service that ANR might potentially offer from the standpoint of whether the product/service is viable in and of itself.
 - To the extent that INPUT had information or a judgment on market-ability this is also noted.
 - It is assumed that in order for a product/service to be marketable it must have a certain minimal functionality (or viability).
 - However, not all viable products may find market acceptance, for such reasons as:
 - Other products are more functional.
 - There are established market leaders.
 - The new product's image is not compelling.
 - There is no price advantage.
- The following pages contain individual evaluations of each of the 21 products/services that have potential for commercial exploitation. Issues covered include:

- A description of the product or service's use within ANR.
 - A description of the likely form of the commercial form of the product or service.
 - Product/service completeness.
 - Readiness.
 - Uniqueness.
 - Synergy with other proposed products/services.
 - Market potential.
- The extent to which the product/service is complete is important. The more features that are offered, the more likely it is that a customer's needs would be fully met by the product.
 - The most emphasis in judging completeness has been given to what could be offered immediately.
 - However, additional features that are in development or could be implemented reasonably quickly (i.e., 6-12 months) were also given weight.
 - It should be noted that a software product cannot be considered complete until it has been used by typical users.
 - The assessment of completeness was based on a combination of ANR and INPUT judgment.

- Readiness is important if ANR wishes to offer a product/service quickly. Readiness involves additional development time as well as recruitment/training time for additional staff.
- A very important factor is the uniqueness of a potential product/service. Unique products are very desirable. In some cases uniqueness could be assessed.
 - Industry specialty product/service's uniqueness was assessed largely on the basis of ANR's specialists' knowledge.
 - General product/services were assessed on the basis of INPUT's knowledge and experience.
- Product synergy will be a very important factor in ANR's overall product planning. Consequently, it was taken into account in these assessments. Where it was felt that any of the proposed products would tend to support each other, the strength of the bonding between a pair of products was assessed as being high, medium or low, and a rationale has been given.
 - An overall assessment of the synergy strength for each product/service was also given. (The overall assessment rating derivation is shown in Exhibit IV-1.)
 - Synergy is a very important component in developing a "portfolio" of products.
 - Specific examples of this self-perception can be seen in vendor advertisements. See Exhibit IV-2.
- The "portfolio concept" is one that is used by many firms.
 - It pulls related products even closer together.

EXHIBIT IV-I

MARKETING SYNERGY SUMMARY

PRODUCT/SERVICE SYNERGIES AND OVERALL RATINGS*		SCORE**
Pipeline Simulation Model-High		20
Environmental Data Reporting-High		18
H Environmental (Air Permit) Consulting-High		18
Truck Freight Model-Medium		12
H Other Transportation Modeling-High		2
Blind Bidding Model-High		18
L Management Science Consulting-Medium		10
M Geological Data Base-High		20
L Financial Modeling Consulting-High		16
L Coal Lease Reporting-Low		4
L General Timesharing-Medium		12
L Computer Time Sales-High		20
M Capacity Planning Software-Medium		14
M Computer Move Consulting-Medium		12
L L L DP Education-Medium		12
M Bulk Printing/Microfiche-Low		8
M Facilities Management-Medium		12
M Boardroom Graphics-Low		4
M Exec. Info. Sys.-Low		8
M Contract Prog.-Low		2
M In-House Timesharing Consulting-Low		4

* H = HIGH, M = MEDIUM, L = Low. Arrows indicate where synergy is in one direction only, (e.g., Pipeline Simulation supports Management Science Consulting, but not vice versa).

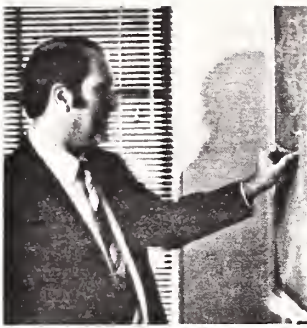
Overall ratings are based on the following: Score ranges; HIGH = 16-20, MEDIUM = 10-14, LOW = 2-8.

** The numeric score is derived by assigning a value to each product's synergy. Where support is in one direction, only the originating product receives credit: H = 8, M = 4, L = 2.

EXHIBIT IV-2

SOFTWARE PORTFOLIOS

(EXHIBIT IV-2 APPEARS ON PAGES 16, 17 AND 18)



Jim Orgill, Director of Data Processing

ADR's integrated software expands productivity and progress at Wright Schuchart, Inc.

SEVERAL

ADR's Integrated software improved DP services.

According to Jim Orgill, Director of Data Processing, "We've been on a fast track for the last year-and-a-half in improving our DP services. We've been able to accomplish with a very small systems development staff what other companies might require 30 or 40 people to achieve. We couldn't have come so far so quickly if it weren't for ADR software. We have DATACOM/DB and DC, DATADictionary, DATAQUERY, ROSCOE and The LIBRARIAN and plan to add other ADR products in the near future."

ROSCOE reduced turnaround time from two days to 12 minutes.

According to Ron Higgins, Manager of Technical Services, Wright Schuchart had been experiencing two-day turnaround in testing. "A programmer would keypunch his deck, submit it to operations and wait for a printout. After we installed ROSCOE, turnaround time went down to 12 minutes."

ADR product integration made job 10 times easier.

"We brought in ROSCOE and The LIBRARIAN about a year ago," Mr. Higgins went on. "They worked so well together that when we looked into a DBMS we asked ADR to be part of that review. One of the vital reasons for choosing ADR was the fact that they build integrated products. It didn't make sense to us to get a data dictionary from one supplier and a data query from another. We wanted software designed to work together, a good example being DATADictionary's integration with The LIBRARIAN. I honestly feel that ADR's integrated products made our job at least 10 times easier."

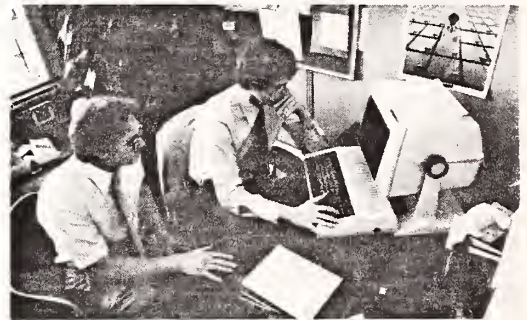
Better support from ADR than any other vendor.

"After ADR installed the initial products," Mr. Higgins continued, "everything worked fine. Then we accidentally clobbered the system. ADR could have told us it was our problem,

not theirs. Instead, they came back, re-installed the software and re-educated us. We've received better support from ADR than any vendor I've ever dealt with."

Instant information with ADR Data Base Management software.

"We're now beginning to make effective use of DATACOM/DB and DC, DATADictionary and DATAQUERY," Mr. Orgill stated. "For example, when the payroll clerks want to find out what construction job one of our thousands of workers is on, they just use DATAQUERY to get the information from DB. Before they'd have had to go through stacks of old reports which could take forever."



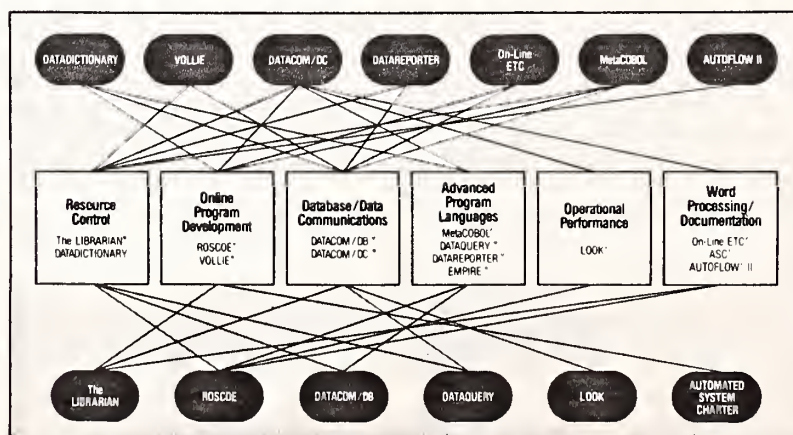
Ron Higgins, Manager of Technical Services (right) and Carl Brockman, Systems Programmer

Productivity climbing.

"Productivity is increasing tremendously," Mr. Orgill concluded. "I give the credit to my staff and to ADR products."

95-year old Wright Schuchart, Inc., is as much a Seattle landmark as the city's famous space needle, which the company built. The 50th largest U.S. contractor is a leading builder of high-rise office buildings, paper mills, and nuclear energy facilities. The company's DP department employs 21 people, operates an IteL AS4, 3330 Model 11 disk drives, has eight terminals inhouse and three at remote construction sites.

ADR. The leader in Datapro Software Awards 1977, 1978 & 1979 for IBM 370/30xx/4300 products. Over 12,000 products installed.



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The IDD gives you a detailed, panoramic view of what's happening in your data base environment. By continually monitoring and tracking information (ranging from data items all the way up to entire application systems with multiple programs), Intel's dictionary puts reports on who, what, where, how, and when at your fingertips. Most importantly, you won't need a crystal ball to forecast the impact of change. Impact reports are standard, too.

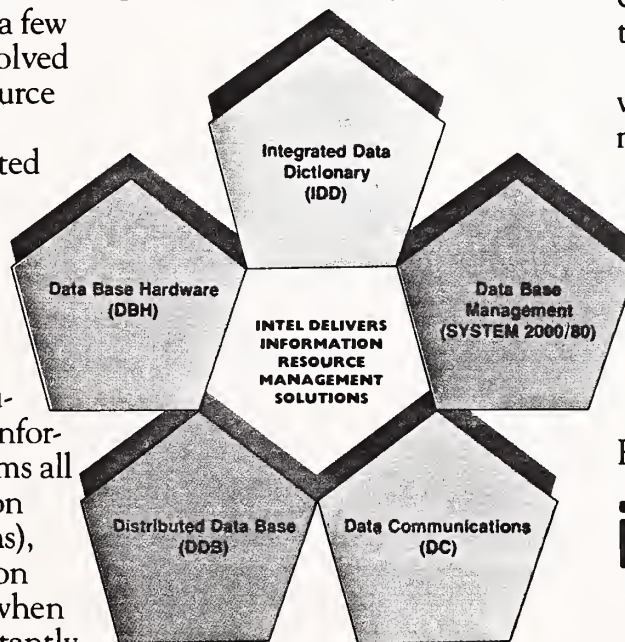
Streamline application development.

With a wealth of vital information in hand, you can simplify the task of building and fine-tuning new applications. And because the dictionary works intimately with SYSTEM 2000®/80, Intel's powerful data base management system, designers are given extensive data modeling and application prototyping capabilities. Moreover, data items, records, and definitions are easily added, deleted, or modified even after a data base is in full production. And, like all IDD

functions, this can be handled on-line or in batch mode.

Enforce standards, communicate, and cut redundancy.

Intel's data dictionary quickly tells you and anyone else involved in data base and application development, what already exists (and



in what form it exists) in your environment. Additionally, the dictionary applies editing, error detection, and correction functions.

Guarantee data security.

Watchdog of your data is IDD's sophisticated security system. With passwords which protect data as far down as the item level, you can be confident that your data remains "clean." You can be confident that unauthorized personnel will not accidentally alter or view sensitive information.

Implement successful solutions.

Intel's Integrated Data Dictionary is an application design aid, a documentation vehicle, a way to enforce standards and procedures, a master reference for determining the impact of change, a tool for controlling growth today and tomorrow.

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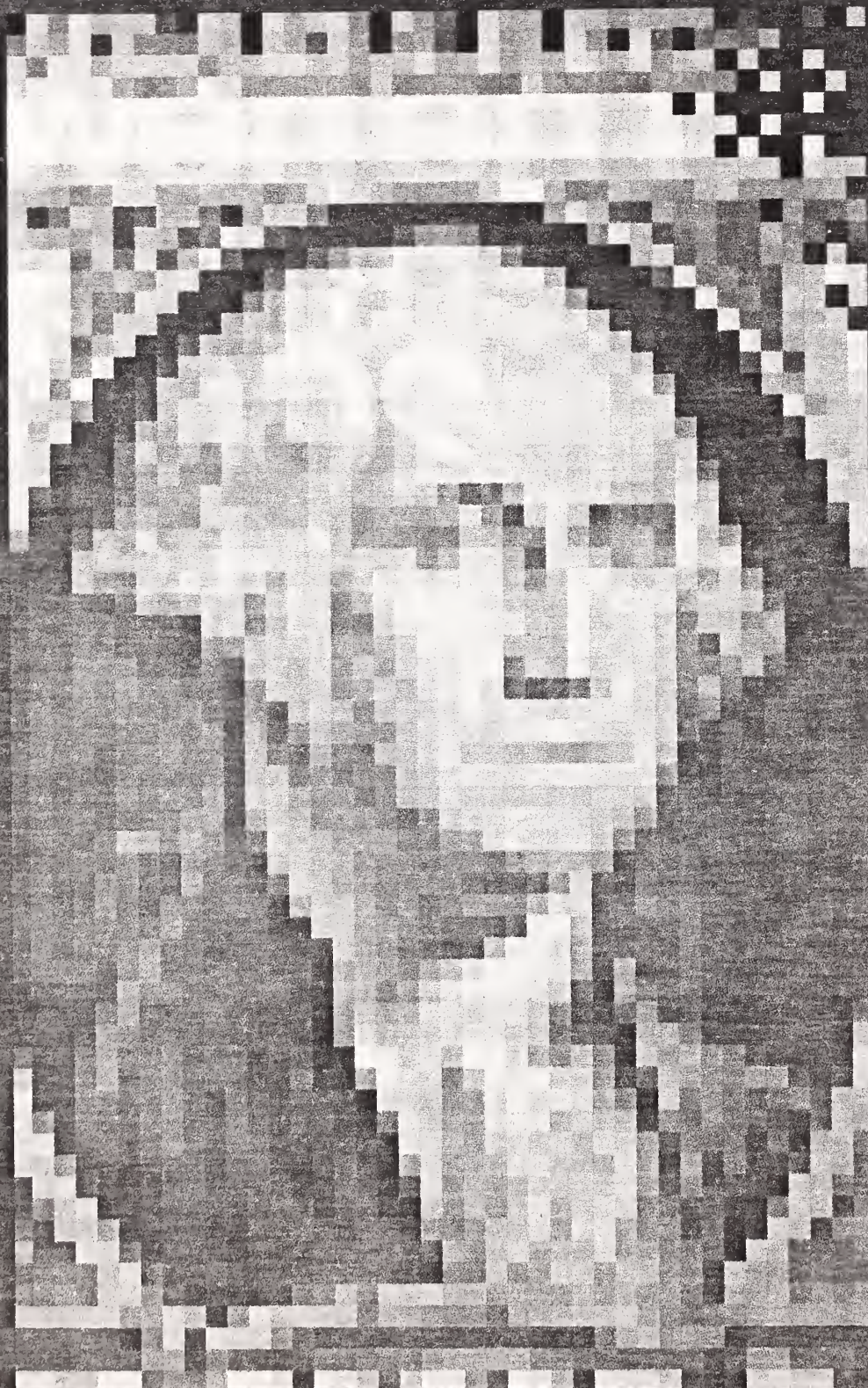
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CIRCLE 87 ON READER CARD

- New products tend to be related to existing products. Example:
 - . Cullinane Corporation is tying specific application products to its IDMS data base management system.
- Many successful software sellers are specialized.
 - By software generally (e.g., ADR).
 - . Have a more diffuse image.
 - By functions (e.g., Boole and Babbage in performance measurement).
 - By application (e.g., MSA in financial software).
 - By industry (e.g., Reynolds and Reynolds in auto dealer software).
- Finally, an assessment of the market potential for the product/service was made, where there was an adequate basis for doing so.
 - For industry specialized areas, this was based on spontaneous expressions of outside interest that have been received by the ANR manager involved.
 - In several general areas, INPUT has made a judgment based on prior relevant experience.

A. PIPELINE SIMULATION MODEL

I. CURRENT USE/STATUS

- This system has evolved over a period of 18 years.

- The current version is a sophisticated model which can handle the following:
 - Varying gas volumes over time (supply operating model).
 - Gas/liquid combinations (gathering model).
 - "What if" situations (gathering model).
 - Limited closed loops.
 - An associated planning model which integrates the supply/transportation/market/supply relationship.
- The system is a combination of interactive and RJE modules.

2. COMMERCIAL OFFERING

- The current system would be offered essentially as is.
- Competitive customers would probably prefer to lease software rather than use the ANR-run timesharing (for data security reasons).
- Two issues on product proprietariness would have to be resolved.
 - The competition's access to the off-shore segment.
 - FERC access to the gathering model.

3. COMPLETENESS: High.

- The product is complete.

4. READINESS: Medium.

- A limited amount of work would be required to "clean up" the system and make it more "user friendly."
- A significant amount of sales or sales effort would require additional staff; it would require 3-12 months to train additional personnel (depending on whether expertise was required in evaluation of results as well as preparing input data).

5. UNIQUENESS: High.

- There is probably no other model as sophisticated.
- At least one model (by INTERCOMM) is offered commercially.

6. MARKETING SYNERGY: High Overall.

- Moderate synergy with:
 - Environmental Data Reporting, Blind Bidding Model, Geological Data Base. (Specialized, technical timesharing services in the same industry.)
- Low synergy with:
 - General Timesharing. (The specialized service could provide an entree for the generalized service.)
 - Environmental (Air Permit) Consulting. (Technical services in the same industry.)
 - Management Science Consulting. (Pipeline Simulation could provide an entree to technically-oriented consulting services in the gas industry.)
 - Strategic Modeling Consulting (The financial component of the pipeline simulation model could be a lead-in to the more general model.)

7. MARKET POTENTIAL: High.

- Several pipeline companies have approached ANR for information on the model. Pipeline companies would be the only market.
- Extent of need/desire not known industry-wide.
- The ANR name and reputation should be positive factors.

B. ENVIRONMENTAL DATA REPORTING

1. CURRENT USE/STATUS

- This is an interactive system developed to collect pollutant data from 170 ANR natural gas compression stations.
- Originally developed for meeting existing air permit requirements. Later expanded to handle water and other pollution sources.
- Flexibility enables system to evaluate:
 - Effects of new regulations.
 - Options for facility sites.
- Portable air pollution monitor outputs will soon be collected for on-line entry to data base.

2. COMMERCIAL OFFERING

- ANR would offer data collection forms and instructions for collecting and entering pollution sources into ANR's timesharing data base.

- Initially, customers would be sought in the natural gas industry. However, the service could be expanded to cover industries whose pollutants were different from ANR's.

3. COMPLETENESS: Medium.

- The service is now complete for natural gas companies.
- The service could be expanded as necessary to collect and report on other types of pollutants. This would probably not be done in advance, but as customers with different characteristics were acquired.

4. READINESS: Medium.

- The service is ready for natural gas customers.
- Additional staff would have to be added if natural gas customers were not phased in carefully. The extra staff might be needed only temporarily.
- If non-natural gas customers were added, additional staff would be required for the modification to software, forms and data collection procedures. This would require a lead time of at least several months.

5. UNIQUENESS: High.

- This is an almost unique service, with only one other natural gas company (Tennessee Gas) having a similar capability.

6. MARKETING SYNERGY: High Overall.

- High synergy with:
 - Environmental (Air Permit) Consulting. (Same buyer.)

- Moderate synergy with:
 - Pipeline Simulation and Geological Data Base. (All are specialized technical data bases in the same industry.)
- Low synergy with:
 - General Timesharing. (The specialized service could provide an entree for the general service.)

7. MARKET POTENTIAL: High.

- Several inquiries have been received from other natural gas companies concerning this system.
- There is a possibility that a service such as this would be used to provide a national data base for natural gas pollutants.
- There is no information on the market potential in other industries.
- The ANR name and reputation should be a positive factor.

C. ENVIRONMENTAL (AIR PERMIT) CONSULTING

I. CURRENT STATUS

- ANR has a staff of two engineers and one meteorologist to obtain its own air permits.
- The Environmental Data Reporting system is of significant assistance to ANR's obtaining permits.

- ANR has recently obtained two air pollution monitors and is now adapting them for on-line data collection.

2. COMMERCIAL OFFERING

- ANR would offer its engineering, expertise, software/hardware and regulatory knowledge on a consulting basis to firms requiring air permits.
- The natural gas industry and small firms (e.g., the construction industry) would be its target customers.

3. COMPLETENESS: High.

- This is a complete service.

4. READINESS: Medium.

- The service is ready now.
- To do any appreciable amount of business, additional staff would be necessary; this would require a lead time of a few months.

5. UNIQUENESS: Medium.

- A number of consulting firms are active in this field. However, no natural gas company (or affiliate) appears to be among them.

6. MARKETING SYNERGY: High Overall.

- High synergy with:
 - Environmental Data Reporting. (Same buyer.)

- Moderate synergy with:
 - Pipeline Simulation and Geological Data Base. (Same industry, technical focus.)
- Low synergy with:
 - Blind Bidding Model. (Same industry, financial focus.)
 - Management Science Consulting. (The specialized consulting could provide entree for general consulting in the same industry.)

7. MARKET POTENTIAL: Medium

- One discussion has been held with another gas company that would be willing to consider ANR as a vendor.
- There is already competition.
- The number of natural gas firms without in-house capabilities is now being determined by ANR.
- The ANR name and reputation should be a positive factor.

D. TRUCK FREIGHT MODEL

I. CURRENT USE/STATUS

- A very sophisticated operations planning system for trucking companies has been developed since 1979.
- The "Less than Truckload" Freight Flow Model has reduced line haul costs by 20% and added \$5 million to net within ANR.

- The truckload pricing model is in operation and "Trailer Marriage" and "Lane Profitability" models are in development.
- There was initial resistance by ANR operating managers but acceptance is now high.

2. COMMERCIAL OFFERING

- The model would be offered on a combined consulting and timesharing basis.
- Customers may wish to acquire software themselves for security reasons.
- Currently, ANR is not disposed to offer this product for fear of giving up a competitive edge. Factors to consider are:
 - Potential income from sales of the model to the trucking industry.
 - Subsequent sales to other transportation segments.
 - The potential to market an obsolescent form of the product.
 - Likelihood of an equivalent model being developed independently.

3. COMPLETENESS: High.

- As a consulting/software product, the service is complete.

4. READINESS: High.

- Additional staff would be required if significant sales or consulting efforts were planned. Additional staff need not be involved with this product.

5. UNIQUENESS: High.

- There is probably no other product as effective in the trucking industry. However, the scope of activity in the air transport industry is not known.

6. MARKETING SYNERGY: Medium Overall.

- High synergy with:
 - Other Transportation Modeling. (This service would give high visibility and entree into other transportation modes.)
- Low synergy with:
 - Strategic Modeling. (The truck freight model could give an entree for selling the more generalized financial model.)
 - General Timesharing. (If customers of the trucking model use the timesharing option, there would be entree for general timesharing.)

7. MARKET POTENTIAL: Unknown.

- Market need and receptivity is unknown.
- The name and reputation of ANR subsidiaries should be a positive factor.

E. OTHER TRANSPORTATION MODELING

I. CURRENT USE/STATUS

- No direct use by ANR.
- See Truck Freight Model for a description of analogous experience.

2. COMMERCIAL OFFERING

- The concept is to apply the knowledge gained in the trucking industry to similar industries. For example:
 - Air transport.
 - Railroads.

3. COMPLETENESS: Medium.

- Modifications to the model and associated software would be made in the course of consulting.

4. READINESS: Medium.

- Far more staff time would be required for moving into a new area.
- Additional staff would be required if a significant sales or consulting effort were planned.

5. UNIQUENESS: Unknown.

6. MARKETING SYNERGY: Low Overall.

- High synergy with:
 - Truck Freight Modeling. (This established product would give significant credibility to offerings to related industries.)
- Low synergy with:
 - Strategic Modeling. (Transportation modeling could given an entree to the more general model.)

7. MARKET POTENTIAL: Unknown.

- The need and receptivity in non-trucking transportation is not known.

F. BLIND BIDDING MODEL

1. CURRENT USE/STATUS

- This model will enable ANR to minimize the dollar amount of a successful sealed bid for oil and gas leases.
- The model exists in a conceptual form and has not been reviewed by users.

2. COMMERCIAL OFFERING

- If offered, the model would be offered on a timesharing or software license basis. For security purposes, some customers might prefer obtaining software to use on their own machines.
- There is considerable question as to whether ANR would be giving up a competitive edge by releasing this model.

3. COMPLETENESS: Unknown.

- Cannot be assessed, since it is not yet in use.

4. READINESS: Low.

- Model not yet ready. Would probably have to be used for at least six months by ANR before being clean enough for release to customers.

- To the extent that there was a significant consulting component, then additional management science staff would have to be hired. Lead time would be at least 6-12 months.

5. UNIQUENESS: Unknown.

- Product may be unique as a commercial offering.
 - However, in-house development elsewhere may not be publicized.

6. MARKETING SYNERGY: High Overall.

- Moderate synergy with:
 - Pipeline Simulation Model and Geological Data Base. (All are technical models in the same industry.)
 - Management Science Consulting. (The Blind Bidding Model could support more general consulting services.)
- Low synergy with:
 - Environmental (Air Permit) Consulting. (Both are services aimed at the same industry.)
 - Strategic Modeling Consulting. (The Blind Bidding Model could support a related, more general financial model.)
 - Coal Lease Reporting. (To the extent that coal leases are subject to blind bids.)
 - General Timesharing. (To the extent that Blind Bidding customers used ANR timesharing.)

7. MARKET POTENTIAL: Unknown.

- Not known.

G. MANAGEMENT SCIENCE CONSULTING

I. CURRENT USE/STATUS

- ANR has an active, successful in-house Management Science consulting group.
- Successful projects include the following services now being evaluated for commercial exploitation:
 - Truck Freight Model.
 - Other Transportation Modeling.
 - Blind Bidding Model.
- The group has an extensive body of experience in probabilistic decision making, including the following:
 - Blind bidding.
 - Acquisition evaluation.
 - Financial planning.
 - Loan justification.

2. COMMERCIAL OFFERING

- ANR would offer proven skills in solving business problems through the use of analytic tools.

3. COMPLETENESS: High.

- The service is complete, given the previously demonstrated ability to successfully adjust to new subject matter areas.

4. READINESS: Medium.

- Limited staff (i.e., two senior and one junior person) is a constraint to being able to take on a significant number of assignments without staff build-up.
- Staff could be added within several months; their start-up time would depend on the activity involved.

5. UNIQUENESS: Low.

- This service is not unique. Many consultants offer similar services.

6. MARKETING SYNERGY: Medium Overall.

- Moderate synergy with:
 - Blind Bidding Model. (Could provide an entree into other natural resource companies.)
 - Strategic Modeling Consulting. (Could provide an entree into other companies.)
- Low synergy with:
 - Pipeline Simulation, Environmental (Air Permit) Consulting, Strategic Modeling, Geological Data Base Coal Lease Reporting. (These spe-

cialized services in the natural resources industry would support ANR consulting.)

- General Timesharing. (Outputs of General Management Science Consulting may be added as proprietary ANR timesharing products.)
- Computer Time Sales. (Some models could be very demanding of customers' existing computer resources.)

7. MARKET POTENTIAL: Unknown.

- The market currently uses considerable amounts of this general type of service.
- The market potential for ANR is unknown.

H. GEOLOGICAL DATA BASE (SPECIALIZED TIMESHARING SERVICE)

I. CURRENT USE/STATUS

- ANR has combined proprietary and purchased data on petroleum and natural gas reserve in its area of interest. This data is used for leasing, exploration and production.

2. COMMERCIAL OFFERING

- ANR will not market this data to other firms for two reasons.
 - Other natural resource firms might obtain data not previously available and would receive a competitive advantage.

- Even if firms received no new information, knowing what data ANR was using would itself constitute a competitive advantage.
3. COMPLETENESS, READINESS, UNIQUENESS: Not Ascertained.
- Not ascertained for this study for reasons stated above.
4. MARKETING SYNERGY: High Overall.
- Moderate synergy with:
 - Pipeline Simulation, Environmental Data Reporting, Environmental (Air Permit) Consulting, Blind Bidding Model. (These are all technically oriented services within the natural resources industry.)
 - Low synergy with:
 - General Timesharing. (The specialized timesharing service could provide entree to the generalized timesharing service.)
5. MARKET POTENTIAL: Unknown.

I. FINANCIAL MODELING CONSULTING AND SOFTWARE

I. CURRENT USE/STATUS

- The Investment Strategy Model (ISM) has been used by ANR and its subsidiaries for the past five years.
- ISM is an interactive modular system, with modules written in IFPS, Fortran and PL/I.

- It produces a ten-year strategic plan; its outputs are financial statements. ISM can run both deterministic and probabilistic analyses.

- ANR also has a three-year planning model.

2. COMMERCIAL OFFERING

- This would be offered as a consulting service which would customize the basic software structure for the client.
- Both short-range and long-range (strategic) planning consulting would be offered.
- After customizing and initial training the client could run and modify the model either on the client's hardware or on the ANR timesharing service.

3. COMPLETENESS: High.

- The financial planning system is complete.

4. READINESS: Medium.

- The modules which use IFPS will have to be replaced with non-IFPS code if the product is going to be offered as a timesharing service. (IFPS cannot be offered by ANR commercially for contractual reasons).
- Generalized software structures must be set up.
- Documentation and training procedures will have to be developed for first-time users.
- This process would take at least six months.

5. UNIQUENESS: Unknown.

- ANR believes the approach is unique.

6. MARKETING SYNERGY: Low Overall.

- Moderate synergy with:
 - Management Science Consulting. (Strategic Modeling could provide an entree into Management Science consulting.)
- Low synergy with:
 - Pipeline Simulation, Truck Freight, Blind Bidding and other transportation modeling. (All could provide an entree for using strategic modeling consulting.)
 - General Timesharing and Computer Time Sales. (Modeling could be run on ANR computers.)

7. MARKET POTENTIAL: Unknown.

- The ANR assumption is that customers will be highly motivated, multidivision companies.
- Market size and needs are not known.

J. COAL LEASE REPORTING

I. CURRENT USE/STATUS

- A coal lease data base was developed three years ago to ensure that South Dakota coal lease payments were made correctly.

- The system has the capacity to store a large variety of contractual, financial, geological and operational data.
 - A coal lease management system could be developed, but has not been because of changes in priorities.
- The coal lease system could be integrated with existing front end systems in the Virginia and Kentucky mines but has not been, due to financial cutbacks.

2. COMMERCIAL OFFERING

- A comprehensive coal management system could be offered with moderate changes.

3. COMPLETENESS: Medium.

- Only the product's core component now exists.
- The product is probably expandable to handle other mineral products.

4. READINESS: Low.

- Additional ANR development is not currently planned, given current priorities.
- Use (and perceived benefits) by ANR coal subsidiaries of a full commercial product would be necessary before it could be marketed.
- Therefore lead time for readiness would be at least one year.

5. UNIQUENESS: Medium.

- At least one similar product is now being marketed.

6. MARKETING SYNERGY: Low Overall.

- Moderate synergy with:

- General Timesharing. (Both services involve timesharing.)

7. MARKET POTENTIAL: Unknown.

K. GENERAL BUSINESS AND SCIENTIFIC TIMESHARING

I. CURRENT USE/STATUS

- Approximately \$12 million worth of general timesharing services (valued at commercial rates) are supplied now to in-house ANR users at a cost of \$4 million.
- Most commercial timesharing has been converted to the in-house timesharing system over the past three years. Major facilities offered include:
 - An interactive financial planning package (IFPS from Execucom).
 - Several business and statistical analysis packages (most notably SAS).
 - A data base management system (System 2000 from MRI).
 - Several utility packages, including a scientific and engineering FORTRAN sub-routine library and the IBM Query By Example report generator.
 - A library of graphics routines.
- IFPS and SAS have been well received by ANR users. (An IFPS replacement is needed because, for contractual reasons, IFPS could not be offered by ANR in its commercial timesharing service.)

- The chief complaint of current users is that the system is occasionally unavailable and/or the response time is sometimes slow. These availability problems appear to be primarily due to a combination of a rapid growth in demand for system resources, coupled with timesharing having, in essence, third priority (behind the Michigan Consolidated customer system and the trucking systems).
- The availability problems should be minimized by the move to the new computer center; the additional memory that has been ordered should further improve performance.

2. COMMERCIAL OFFERING

- The intent would be to offer essentially the current timesharing service with its generalized capabilities.
- Other specialized software developed by ANR (e.g., environmental data reporting, pipeline simulation) would also be offered as part of the commercial timesharing service. (Such software is now not usually considered by ANR to be part of timesharing services.)
- The commercial timesharing service would have to guarantee its customers a high level of system availability by isolating timesharing computing resources and/or giving non-ANR timesharing customers special priority.

3. COMPLETENESS: Medium.

- ANR could offer a reasonably complete package of general timesharing services, assuming that an adequate replacement for IFPS could be obtained.
- The ANR timesharing package would obviously contain fewer offerings than the major timesharing services.

- Research would be required to ascertain if these differences were significant.

4. READINESS: Medium.

- There are two principal issues which must be addressed.
 - The IFPS package replacement must be selected and ANR staff become proficient in its support. This would take at least six months.
 - Sufficient computing resources must be assured for commercial time-sharing users. This would be easily achieved if commercial timesharing were not offered until Michigan Consolidated systems were no longer a factor in ANR systems planning. Otherwise additional hardware resources would be required.
- Integrated and expanded documentation and reference manuals will be necessary in a commercial environment. This would require several man-years of effort and would take at least six months.
- Current staffing levels are adequate and there would be few problems in building up staff needed by the commercial service.

5. UNIQUENESS: Low.

- There will be no unique features compared to typical existing timesharing services.

6. MARKETING SYNERGY: Low Overall.

- Low synergy with:
 - All modeling and specialized timesharing services. (Specialized time-sharing services can provide an entree to general timesharing.)

- Strategic Modeling Consulting. (Customers may use the timesharing mode of ANR modeling packages on a permanent basis.)
- Facilities Management, Computer Time Sales, Bulk Printing. (All are services involving use of computer resources.)
- Computer Education and Training. (Involves contact with users of computer services.)

7. MARKET POTENTIAL: Unknown.

- There is no evidence concerning market acceptance of this service.
- The ANR name and reputation would probably not be a significant factor for most potential customers.

L. COMPUTER TIME SALES

1. CURRENT USE/STATUS

- ANR has a sophisticated dual 3033 installation, offering a full range of hardware and software services.

2. COMMERCIAL OFFERING

- This would be a sale of raw computer time on an RJE basis. Value added sales, i.e., use of ANR software, would be via ANR timesharing.

3. COMPLETENESS: High.

- The service is complete.

4. READINESS: High.

- The service could be started immediately.
- There would be few computer resource or personnel constraints for probably the first year.

5. UNIQUENESS: Low.

- The service is not unique. A number of firms sell or trade time on an opportunistic basis.

6. MARKETING SYNERGY: High Overall.

- Moderate synergy with:
 - Bulk Printing/Microfiche Production and Facilities Management. (All are data processing operations services.)
- Low synergy with:
 - Management Science Consulting and Strategic Modeling Consulting. (Some consulting engagements could produce software models beyond the capacity of client data processing operations.)
 - General Timesharing. (Both involve the sale of computer time.)
 - Capacity Planning, Computer Move Consulting and Data Processing Education. (All these services are related to data processing operations.)

7. MARKET POTENTIAL: Unknown; Probably Low.

- Nationally many firms offered these services in the past, while few do now; prices have been falling.
- The local market is not known, although economic conditions argue against high demand.

M. CAPACITY PLANNING SOFTWARE

I. CURRENT USE/STATUS

- Capacity Planning has been used in its present interactive form since mid-1980.
- It is fed by SMF computer measuring outputs and user judgments on application growth.
- Its chief output now is forecasts of CPU loadings.
- The following product extensions are planned.
 - Additional flexibility in job-naming to permit subsystem resource utilization to be tracked. (Currently the product cannot go below the ANR "work order.")
 - Conversion of units of capacity to dollars so that systems resource usage can be summarized across different types of hardware.
 - An interface with statistical forecasting to take into account such things as seasonality.
 - A computer configuration optimization model.

- Improvements in "time-slice" measurements of the computer system.

2. COMMERCIAL OFFERING

- The enhanced system would be offered to data processing installations for projecting their computer resource needs.
- The product would probably be offered as a software package, with some consulting assistance. A timesharing version is also possible.

3. COMPLETENESS: Medium.

- The product is still in a relatively early stage of development. When features now being planned are implemented and used, they will probably suggest further extensions.

4. READINESS: Medium/low.

- A significant amount of development remains. Several man-years of development of planned extensions are required; these will take at least six months of elapsed time.
- After development, extensive testing should be done at ANR as well as other user sites to ensure that the software meets user expectations and is reliable and accurate.

5. UNIQUENESS: Unknown.

- The software was developed by ANR because no package was found which met its needs.
- Further exploration should be undertaken to fully understand competitive offerings before development for commercial purposes is undertaken.

6. MARKETING SYNERGY: Medium Overall.

- Moderate synergy with:

- Computer Move Consulting. (Exceeding computer center capacity is an important reason for computer moves.)
- Facilities Management. (A Capacity Planning service could serve as an entree to taking over management of a computer facility.)
- Computer Time Sales. (Computer time is often purchased because of lack of in-house capacity.)
- Data Processing Education. (Both are involved in improving use of computer resources.)

7. MARKET POTENTIAL: Unknown.

N. COMPUTER MOVE CONSULTING

I. CURRENT STATUS

- In 1980 ANR Computer Operations designed, built and moved into the new computer facility within a nine-month period.
- The new computer facility was well-designed and constructed.
- The move was well-planned and executed.

2. COMMERCIAL OFFERING

- The experience and methodology gained would be packaged and offered to other large data centers planning a new site and/or a move.

3. COMPLETENESS: High.

- This service would require some additional work:
 - Methodologies would have to be packaged and generalized.
 - The service's features would probably be expanded and modified as additional experience was gained with the first several customers.

4. READINESS: High.

- The service could be offered now.

5. UNIQUENESS: Medium.

- Data processing consulting groups may offer assistance in this area as an afterthought.
- IBM supplies limited assistance.

6. MARKETING SYNERGY: Medium Overall.

- Moderate synergy with:
 - Capacity Planning and Data Processing Education. (All are related to data processing operations.)
 - Computer Time Sales. (Purchasers of computer time may be expanding their computer facility because they cannot handle existing loads.)

7. MARKET POTENTIAL: Unknown.

0. DATA PROCESSING EDUCATION

1. CURRENT USE/STATUS

- ANR provides an extensive system of in-house education and training, including both live in-house instructors and commercially-obtained video tapes.

2. COMMERCIAL OFFERING

- ANR would offer its live courses to users of its other commercial services, as well as to installations which needed additional training.
- ANR would not be able to resell its commercial video materials; its courses would supplement video training.

3. COMPLETENESS: Medium.

- Additional training materials would be needed for ANR-oriented courses.
- Additional courses would have to be developed for other installations with differing hardware/software.

4. READINESS: Medium.

- Staff and materials would have to be added. This would take several months.

5. UNIQUENESS: Low.

- Many organizations offer courses, in-house seminars and instruction materials.

- On-site video education would be a significant competitor.
6. MARKETING SYNERGY: Medium Overall.
- Moderate synergy with:
 - Computer Move Consulting. (To the extent that education/training is oriented toward data processing operations oriented.)
 - Low synergy with:
 - General Time Sharing, Computer Time Sales, Capacity Planning, Facilities Management. (All of these offer/require access to data processing management and staff.)
7. MARKET POTENTIAL: Unknown.
- ANR's acceptance in this market is unknown.

P. BULK PRINTING/MICROFICHE PRODUCTION

1. CURRENT USE/STATUS

- ANR has two high-speed IBM 3800 printing systems and a Kodak KOMSTAR microfiche system, which have about half of their capacity unused.

2. COMMERCIAL OFFERING

- ANR would sell printing time. Print files could be entered on a remote basis.
- ANR would prepare microfiche (or microfilm) copies of computer files.

- This service is closely related to Computer Time Sales.
3. COMPLETENESS: High.
- The service would be complete.
4. READINESS: High.
- The service could be ready in a matter of weeks.
5. UNIQUENESS: Low.
- The pattern of printing capacity not being completely used is a common one in data processing departments.
 - There are numerous microfiche service bureaus.
6. MARKETING SYNERGY: Low Overall.
- Moderate synergy with:
 - Computer Time Sales and Facilities Management. (These are all concerned with computer operations.)
7. MARKET POTENTIAL: Unknown; Probably Low.
- The market opportunities are very similar to Computer Time Sales.

Q. FACILITIES MANAGEMENT

I. CURRENT USE/STATUS

- ANR has an able operations staff which operates its own large IBM data processing facility.

2. COMMERCIAL OFFERING

- ANR would offer this expertise to manage the operations of other companies' computer operations.
- The operations staff of the managed facility might be made employees of the ANR Service Company.
- Often, hardware and software are modified for more efficient operation.

3. COMPLETENESS: Medium.

- Neither ANR nor its staff have had experience in operating other facilities nor in the conversion process (involving hardware, software and personnel).

4. READINESS: Medium.

- Additional staff would be required so that the management of the ANR facility was not neglected.
- At least one key staff member should have facilities management experience.

5. UNIQUENESS: Low.

- A number of firms (some of them very large) offer facilities management services.

6. MARKETING SYNERGY: Medium Overall.

- Moderate synergy with:
 - Computer Time Sales, Capacity Planning, Bulk Printing/Microfiche Production. (These are all activities which use or manage the use of computer facilities.)

7. MARKET POTENTIAL: Unknown; Probably Low.

- Facilities Management was originally viewed as a way to economize on expensive hardware resources. This rationale is fading.
- Facilities Management is still extensively used by the Federal Government, but has not found widespread acceptance elsewhere.

R. BOARDROOM GRAPHICS

1. CURRENT USE/STATUS

- Not in use in ANR.

2. COMMERCIAL OFFERING

- This is a concept that would be refined.
- The basic approach would be to develop a computer system which would display graphics for meetings and presentations--both static and dynamic graphics.
- There would be a feature which would allow changes and modifications in the course of the presentation to allow, for example, for "what if" questions.
- The product might be a turnkey standalone system, run by ANR-supplied software on customer hardware or via ANR timesharing. This will be defined in the course of development.

3. COMPLETENESS AND READINESS

- The product is now only a concept.

4. UNIQUENESS: Unknown.

- There is some activity in this area by consultants and within individual user firms.

5. MARKETING SYNERGY: Low Overall.

- Moderate synergy with:
 - Financial Modeling Consulting and Executive Information Systems. (All involve presenting decision-making information to management.)

6. MARKET POTENTIAL: Unknown.

5. EXECUTIVE INFORMATION SYSTEM

1. CURRENT USE/STATUS

- Not in use in ANR, but may be developed for ANR use.

2. COMMERCIAL OFFERING

- This is a concept that would be refined.
- The basic approach is to develop a hardware/software unit that an executive could use to obtain information and answer "what if" questions.
- The product would be very "user friendly."

- Information could be presented in both tabular and graphics form.
 - The product would probably be a combination of ANR software and perhaps special terminals that would run on customer hardware. An ANR timesharing option is a possibility.
3. COMPLETENESS AND READINESS
- The product is now only a concept.
4. UNIQUENESS: Unknown.
5. MARKETING SYNERGY: Low Overall.
- Moderate synergy with:
 - Financial Modeling Consulting and Boardroom Graphics. (All involve presenting decision-making information to management.)
6. MARKET POTENTIAL: Unknown.

T. CONTRACT PROGRAMMING SERVICES

1. CURRENT USE/STATUS
- ANR has a large competent programming staff.
2. COMMERCIAL OFFERING
- ANR would offer programmer services on a contract basis.

- ANR would have to establish which potential candidates were willing to do this sort of work, especially where significant travel was involved.
 - If this business were expanded, ANR could act as an agent for free-lance programmers; in this case, the service becomes similar to that of an employment agency.
3. COMPLETENESS: High.
- ANR has a wide range of programming expertise.
4. READINESS: Medium.
- Additional staff would have to be hired to replace those on assignment.
 - Willingness to travel would have to be ascertained.
 - A sales organization would be required.
5. UNIQUENESS: Low.
- Many firms and individuals offer this kind of service.
6. MARKETING SYNERGY: Low Overall.
- Low synergy with:
 - Data processing education. (At times a contract programmer may be needed until existing staff can be trained.)
7. MARKET POTENTIAL: Unknown.
- There is a high demand for programming staff in general.

- The demand pattern for contract programming services is not known.

U. IN-HOUSE TIMESHARING CONSULTING

I. CURRENT USE/STATUS

- ANR has successfully set up its own in-house timesharing system.

2. COMMERCIAL OFFERING

- ANR would apply this experience in assisting other companies that wished to set up their own timesharing system.
- The consulting service would include:
 - Evaluating whether to go in-house at all.
 - Determining which services to offer in-house.
 - Technical issues.
 - Selling users.
 - Support and training.
 - Internal pricing algorithms.
- ANR could receive a commission from software firms for placing their software.

3. COMPLETENESS: High.

- ANR has gone through the entire cycle itself.

4. READINESS: High.

- ANR could start immediately.
- Staff could be drawn from different areas so staffing constraints would not be a short-term problem.

5. UNIQUENESS: Unknown.

6. MARKETING SYNERGY: Low Overall.

- Moderate synergy with:
 - General Timesharing. (Residual timesharing might go to the ANR Timesharing service.)
 - Capacity Planning. (Capacity Planning becomes more important with an in-house timesharing service.)

7. MARKET POTENTIAL: Unknown.

V POTENTIAL PRODUCTS: SUMMARY
AND RECOMMENDATIONS

V POTENTIAL PRODUCTS: SUMMARY AND RECOMMENDATIONS

A. SUMMARY

- ANR has a well-run data processing department with extensive knowledge and experience in general data processing areas as well as highly specialized expertise in areas related to the natural gas industry.
 - ANR's solid foundation in existing skills and management make it more suited to entering the commercial market than the typical data processing operation of its size.
- Exhibit V-1 summarizes the individual evaluations.
 - Four of the highest scoring products/services are in the area of industry specialization.
 - However, lower scoring areas should not be dismissed, since in several cases a low score is due to the presence of several unknowns (that may be resolved satisfactorily).
 - Low scoring, but promising, areas include:
 - Blind Bidding.

EXHIBIT V-1

PRODUCT/SERVICE SUMMARY

ID	*PRODUCT/SERVICE	*COMPLETENESS	*READINESS	*UNIQUENESS	*SYNERGY	*MKT. PTNL.	SCORE**
A	Pipeline Simulation	H	M	H	H	H	36
B	Environmental Data Reporting	M	M	H	H	H	32
C	Envi. (Air Permit) Consulting	H	M	M	H	M	28
D	Truck Freight Model	H	H	H	M	U	28
E	Other Transportation Modeling	M	M	U	L	U	10
F	Blind Bidding Model	U	L	U	H	U	10
G	Management Science Consulting	H	M	L	M	U	18
H	Geological Data Base	n/a	n/a	n/a	H	U	-
I	Financial Modeling Consulting	H	M	U	L	U	14
J	Coal Lease Reporting	M	L	M	L	U	12
K	General Timesharing	M	M	L	L	U	12
L	Computer Time Sales	H	H	L	H	U/L	28
M	Capacity Planning Software	M	M/L	U	M	U	11
N	Computer Move Consulting	H	H	M	M	U	24
O	Data Processing Education	M	M	L	M	U/L	14
P	Bulk Printing	H	H	L	L	U/L	22
Q	Facilities Management	M	M	L	M	U	16
R	Boardroom Graphics	U	U	U	L	U	2
S	Executive Information System	U	U	U	L	U	2
T	Contract Programming	H	M	L	L	U	16
U	In-House Timesharing Consulting	H	H	U	L	U	18

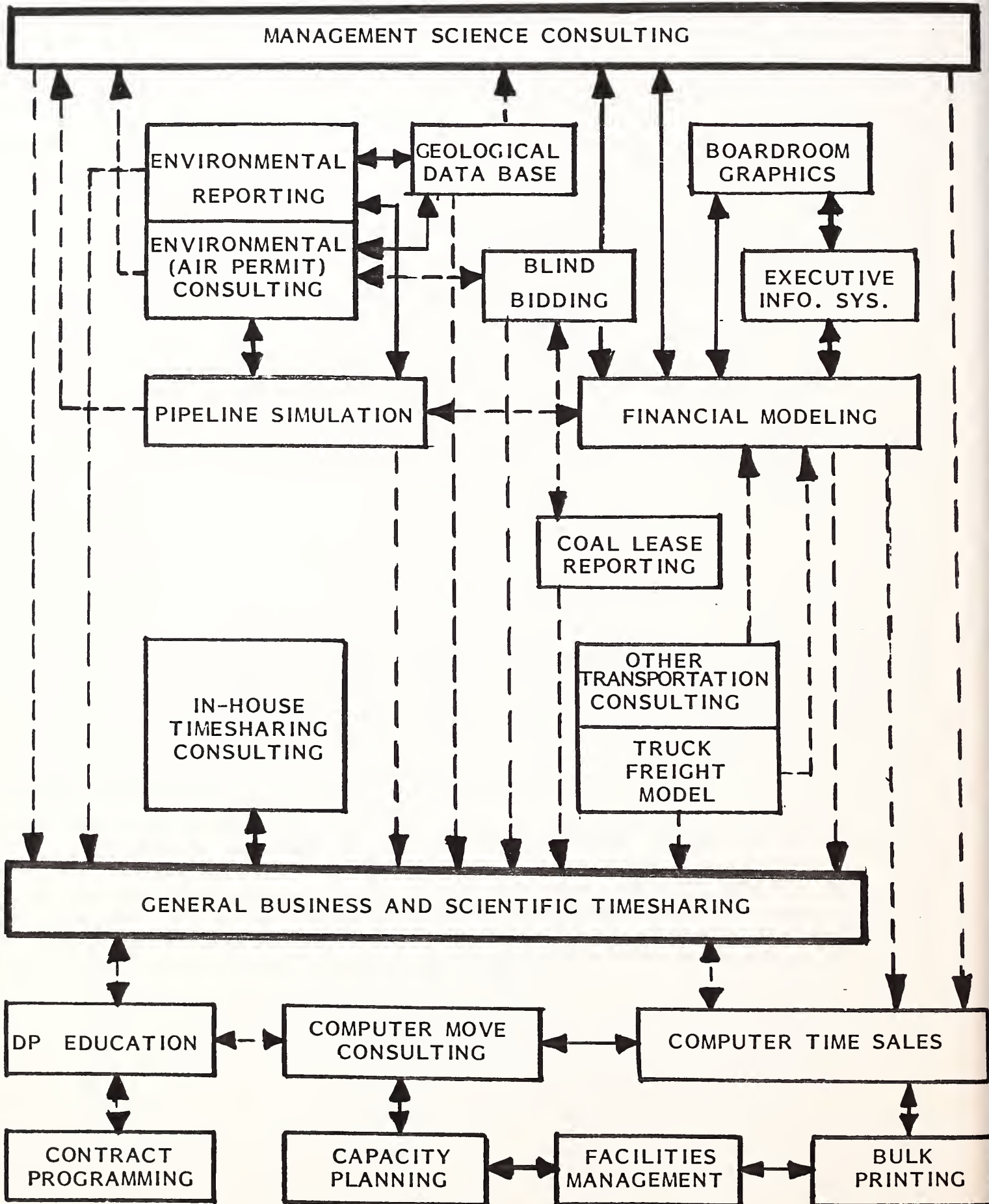
*H = HIGH, M = MEDIUM, L = LOW, U = UNKNOWN, n/a = NO ASSESSMENT

**Score is the sum of ratings where H = 8, M = 4, L = 2, U = 0

- Financial Modeling.
 - Capacity Planning Software.
 - Boardroom Graphics.
 - Executive Information System.
 - In-House Timesharing Consulting.
- Three products/services score well by virtue of their internal ANR qualities (completeness, readiness, synergy), but they may have the fatal flaw of market non-acceptance:
 - Computer Time sales.
 - Bulk Printing.
 - Facilities Management.
- The synergy between products described in the text of each product/service is shown graphically in Exhibit V-2. Note that synergy can be "bidirectional," where two products mutually support each other, or "unidirectional," where one product lends support to another.
- These are two "synergy centers."
 - Natural gas-related products/services.
 - Pipeline Simulation.
 - Environmental Reporting.
 - Environmental (Air Permit) Consulting.

EXHIBIT V-2

PRODUCT/SERVICE SYNERGY



- . Blind Bidding.*
- . Geological Data Base.*

*May not be offered.

- Data processing functional products/services.

- . Computer Time.**
- . Bulk Printing.**
- . Facilities Management.**
- . Capacity Planning.
- . Computer Move Consulting.

**May be weak market demand.

B. DETAILED RECOMMENDATIONS FOR FURTHER ACTIONS ON POTENTIAL PRODUCTS AND SERVICES

- Recommendations are grouped by the type of action which should take place. Six different courses of action are recommended:
 - l. Presentation of seminars to potential customers as a means of market entry (six products/services).
 - . Market research is not recommended because the products are complete and the market is defined.

- . As noted, the seminars can provided excellent market research as well as sales leads.
- 2. Potential seminar presentation (two products/services).
- 3. No ANR marketing efforts are recommended in the short/medium term (five products/services).
- 4. No action is recommended until more information is available (two products/services).
- 5. Local marketing of products/services is recommended (three products/services).
- . These represent products/services where additional market research would not be productive, in INPUT's opinion.
- . If marketed at all, functional managers should be encouraged to market the service directly to local customers.
- 6. Further market research is recommended in Phase 2 (three products/services).

I. PRESENT SEMINARS

- Products/services do not need formal market research where.
 - They are complete.
 - They are reasonably ready.
 - Target markets are defined.
 - Start-up costs are not large.

- Products/services in this category include:
 - Pipeline Simulation.
 - Environmental Data Reporting.
 - Environmental (Air Permit) Consulting.
 - Truck Freight Model (if released).
 - In-House Timesharing Consulting.
 - Computer Move Consulting.
- These products/services should be marketed by means of seminars (with sales follow-up).
 - Seminars on In-House Timesharing and Computer Moves could reasonably be offered on a fee basis.
 - Some of the others might also be charged for, depending on the type of material included.
 - This approach would provide immediate feedback on customer needs, as well as being an efficient use of sales resources.
- Seminars can provide a forum for market research, both at the seminar itself and in in-depth follow-up interviews with selected participants.

2. POTENTIAL SEMINAR PRESENTATIONS

- Action on the following products/services is contingent on other ANR actions.
 - Other Transportation Modeling.

- Provision of this product/service would follow exploitation of the Truck Freight Model.
 - If the Truck Freight Model were withheld from the market, it would be very difficult to enter this related area.
- Blind Bidding Model.
 - Further action on this should be delayed until the model is operational and accepted.
 - At that time the extent to which it is proprietary should be assessed.

3. NO ACTION RECOMMENDED

- It is recommended that ANR take no action, at least in the short/medium term, on the following products/services.
 - Geological Data Base.
 - A good product, but highly proprietary. The non-proprietary components are not likely to excite much customer interest.
 - Management Science Consulting.
 - This service may be sold as a follow-on to more specialized services on an essentially opportunistic basis.
 - Coal Lease Reporting.
 - A decision should be deferred until ANR has completed and successfully tested this product.

- The following products are too general for market research to uncover much useful information:
 - Facilities Management.
 - The market appears weak in general for this service.
 - This kind of service would probably be too different from other ANR products and services to be offered initially.
 - Contract Programming.
 - This is essentially a data processing personnel agency business and would probably be too different from other ANR products and services to offer initially.
 - This is a highly competitive business that has an uneven reputation.

4. OBTAIN MORE INFORMATION

- The following concepts appear very attractive potentially. However, more work is required before a recommendation can be made.
 - Boardroom Graphics.
 - Executive Information System.
- At the least, different design options should be specified, with associated costs and technical feasibility evaluated.
 - For example, a specialized, high-technology piece of hardware might be required which ANR might decide was not an appropriate product to become involved with.

- After design options were described and costed, additional market research would be very important to match different product scenarios against customer needs.
5. IF MARKETED, PROCEED USING LOCAL INITIATIVE
- Offering of the following products/services can proceed immediately. Targets of opportunity should be seized to test local demand and ANR's ability to supply the market.
 - Computer Time Sales.
 - Bulk Printing/Microfiche.
 - Data Processing Education.
 - In INPUT's opinion, local sales initiative will quickly determine customer acceptance.
 - ANR should have its best opportunities in its local area:
 - Logistics favor a local service.
 - ANR's name should be a positive factor.
 - In INPUT's opinion, sales of computer time and printing are likely to be variable and may not generate significant revenue.
 - Entering the education market should be done in a low-key, low-expense mode to gain experience with commercial education.
 - After ANR has assessed its capabilities and desires in this area, a regional market research program could be fruitful.

6. MARKET RESEARCH RECOMMENDED

- INPUT recommended interviewing of potential customers and vendors of the following products/services to test the market response.
- Capacity Planning Software.
 - Research among data processing installations can determine:
 - Perceived need for this tool.
 - Intensity of need by segment.
 - Features desired.
 - Value to customers.
 - Research can be especially useful because significant amounts of product development still remain and can be directed to the most commercially viable areas.
- General Timesharing.
 - Research among purchasers of timesharing services (both users and data processing departments) can determine:
 - Present satisfaction.
 - Propensity to change.
 - Willingness to use multiple services.
 - Importance of price.

- Importance of the range of software offered.
- The last two issues will be crucial to ANR's ability to enter this market.
- Financial Modeling Consulting.
 - Research among users of financial models can determine:
 - Their willingness to use models.
 - Current use of models and satisfaction.
 - Willingness and ability to change approaches to financial planning.
 - Attraction of the ANR approach.
 - The research process could also be used to find companies willing to be test sites for product development.
 - In INPUT's opinion, obtaining low-keyed test sites will be critical to developing a product that would be successfully implemented by its first customers. A positive initial reception of this product will be critical to its acceptance and quite possibly to the entire ANR image.
 - Financial planning has high visibility in many major corporations.
- Note: This last recommendation was accepted and the research results are described in the next chapter.

VI MARKET STUDIES OF THREE PRODUCTS

VI MARKET STUDIES OF THREE PRODUCTS

- This chapter discusses the findings of the market research in the following areas:
 - Capacity planning software.
 - General timesharing service.
 - Financial planning consulting and software.

A. CAPACITY PLANNING SOFTWARE

I. CURRENT USE/STATUS

- Virtually all installations with a 370/158 or larger mainframe use some type of performance measuring tools. See Exhibit VI-1.
 - Half of the installations use two or more tools.
 - There is no apparent pattern or standard in the use of tools. See Exhibit VI-2.
 - Most installations do not use existing tools to their fullest extent.

EXHIBIT VI-1

MEASUREMENT TOOLS USED PER INSTALLATION

<u>NUMBER OF TOOLS USED PER INSTALLATION</u>	<u>PERCENTAGE OF INSTALLATIONS</u>
4	15%
3	15%
2	38%
1	26%
0	6%

EXHIBIT VI-2

CONCURRENT MEASUREMENT METHODOLOGIES

- 12 SMF users
 - 4 use a statistical "front end"
 - 7 use RMF
 - 9 use another software package or hardware monitor
- 18 RMF users
 - 6 use a statistical "front end"
 - 7 use SMF
 - 7 use another software package or hardware monitor
- 5 accounting package users
 - 4 use another methodology as well
- 13 software monitor users
 - All 13 use another methodology as well
- 6 users of other software but not a statistical "front end" (e.g., schedlers, reporting packages) as well
 - 6 use another methodology as well
- 4 use another methodology as well
- 4 hardware monitor users
 - 3 use another methodology as well
- 3 users of manual analysis network
 - 1 in conjunction with a software package

- Personnel shortages hamper their use.
 - Current tools are complex and supply too much raw data.
 - Tools are typically used when there are perceived problems.
- Scientific capacity planning is in its infancy.
 - Most installations use their performance measurement tools for capacity planning. See Exhibit VI-3.
 - The 20% which use additional tools are often using measurement tools rather than capacity planning tools.
 - There was considerable interest expressed in better tools.
 - Best/I was mentioned by several respondents.
 - Many of those interviewed have only a partial understanding of capacity planning issues. For example, most respondents had not given much thought to these key issues:
 - Capacity planning as part of the development process.
 - Coping with "what ifs" against large data bases.
- Currently, there is a profusion of unintegrated tools.
 - Job accounting packages.
 - Monitors, batch/on-line, e.g., for:
 - MVS.

EXHIBIT VI-3

CAPACITY PLANNING TOOLS NOW USED

<u>TOOL</u>	<u>PERCENTAGE OF RESPONDENTS</u>
SAME AS FOR PERFORMANCE MEASUREMENT	65%
OTHER SOFTWARE TOOLS	20%
NO TOOLS USED	15%

- . CICS.
- . IMS.
- . Hardware.
- Schedulers.
- Simulation and modeling tools.
- These appear to be used in a hit-or-miss fashion.
 - Irregular use.
 - Few standards.
 - "Not easy" to tie together (vendor).

2. FUTURE TRENDS

- Virtually all users see measurement and capacity planning becoming more important or offering better techniques. See Exhibit VI-4.
 - Notably, no respondent saw less use or importance in this area.
- Vendors see increasing tool integration, because, in the words of a major vendor, "Users are getting smarter." See Exhibit VI-5. Vendors also see:
 - Major product improvements and new features being added.
 - On-line data collection with interactive, on-the-fly "what if" analysis being possible.

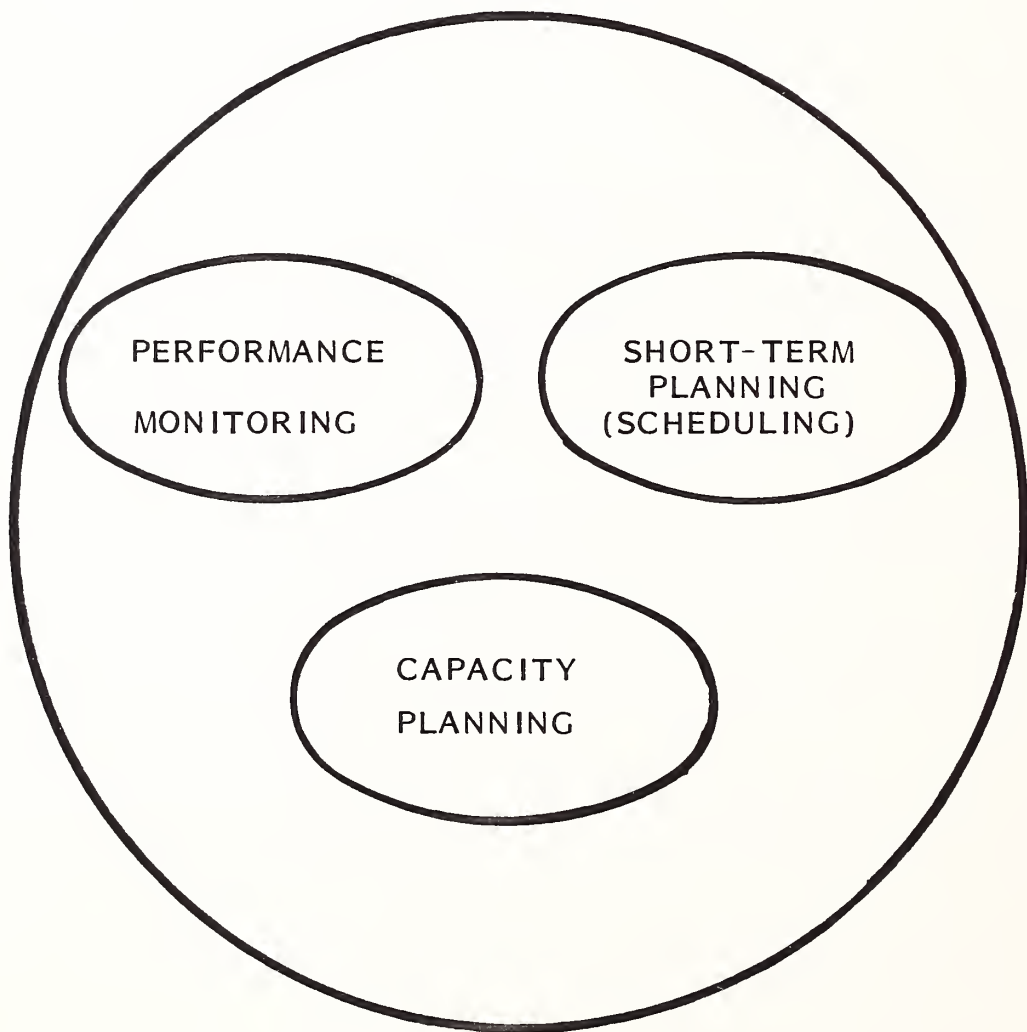
EXHIBIT VI-4

TRENDS FORESEEN IN MEASUREMENT AND CAPACITY PLANNING IN THE NEXT FIVE YEARS

<u>TREND</u>	<u>PERCENTAGE OF RESPONDENTS</u>
INCREASING IN IMPORTANCE AND USE	61%
IMPROVING TECHNICAL APPROACHES	14%
BUILDING INTO HARDWARE	11%
INCREASING PART OF BUSINESS PLANNING	6%
DO NOT KNOW	8%

EXHIBIT VI-5

MEASUREMENT AND PLANNING: INTEGRATION



PERFORMANCE MANAGEMENT

- Automatic correction of problems, rather than problems merely being flagged.
- The "financial optimization" model attracted considerable interest among DP installations. See Exhibit VI-6.
 - However, considerable doubt was expressed over its likely cost.
 - Vendors were, in the words of one respondent, "intrigued," but thought it was too far in front of the market.
- There is the potential for measurement to be pulled back into hardware/firmware.
 - This would have profound effects of the performance measurement industry.
 - In itself, it could potentially assist the ANR product since integration would be less of an issue.

3. MARKET ENTRY

- Competitive situation.
 - The current generation of measurement products (monitors and schedulers) operates in a semisaturated market. There are many products offered. See Exhibits VI-7.
 - A new generation of more integrated monitoring and scheduling products may upset the present product balance, with perhaps new market leaders emerging.
 - Capacity planning products are only now emerging in the commercial marketplace. See Exhibit VI-8.

EXHIBIT VI-6

LEVEL OF INTEREST IN FINANCIAL OPTIMIZATION MODEL

<u>LEVEL OF INTEREST</u>	<u>PERCENTAGE OF RESPONDENTS</u>
VERY HIGH	29%
HIGH	24%
NO OPINION	9%
LOW	18%
NONE	21%

EXHIBIT VI-7

MEASUREMENT PRODUCTS - BATCH MONITORS (PARTIAL LIST)

<u>NAME</u>	<u>VENDOR</u>	<u>PRICE (\$K)</u>	<u>NO. INSTALLED</u>	<u>YEAR INTRODUCED</u>
ALERT	NCR COMTEN	8.9-14	95	1974
CMF	BOOLE & BABBAGE	21	250	1978
EPILOG	CANDLE	15		
4-TUNE	CAPEX	9.3		
IMPROVE/CICS	INSAC	10		1979
IMPROVE/MON	INSAC	9		
MANAGE/IMS	CAPEX	9.6		1978
IUP'S, E.G., GTFPARS	IBM	RENTAL		
MARKETING SUPPORT PRODUCTS	IBM			
PLAN IV	CAPEX	6.5-15	225	1975
QCM	DUQUESNE	12-44	100	1971
RTA/CICS	CANDLE	5		
SARA III & IV	BOEING	6.8-8	90	1974
SPM	DUQUESNE	12-24	120	1971
TSO/MON	MORINO	13.4	160	1976
VS/INSIGHT	UNIVERSAL	.165/MO	15	1976
CAPTURE/MVS	BGS	6.5	25	1978

EXHIBIT VI-7

MEASUREMENT PRODUCTS - ON-LINE MONITORS (PARTIAL LIST)

<u>NAME</u>	<u>VENDOR</u>	<u>PRICE(\$K)</u>	<u>NO. INSTALLED</u>	<u>YEAR INTRODUCED</u>
CICS/INFORM	COMMUNICATIONS SOFTWARE AIDS			
CONTROL/IMS REALTIME	BOOLE & BABBAGE	13	100	1978
DEXAN	CANDLE	5		
EXHIBIT	EXPERT SYSTEM PROGRAMMING	10		
EXPLORE/DISCOVER	GOAL SYSTEMS	3.6-12	200	1976
IMPROVE/RT	INSAC	6		
INSYD	LABYRINTH SYSTEMS	4.5		
LOOK	ADR	6-32.6	800	1975
OMEGAMON	CANDLE	15	75	1976
OMEGAMON/CICS	CANDLE	15		
RESOLVE	BOOLE & BABBAGE	6-18	300	1975
SMT	VALUE	75-8.5	100	
SPI	DUQUESNE	6-24		
TSAIL	TOTAL SYSTEMS	4.9		

MEASUREMENT PRODUCTS - SCHEDULERS (PARTIAL LIST)

<u>NAME</u>	<u>VENDOR</u>	<u>PRICE (\$K)</u>	<u>NUMBER INSTALLED</u>	<u>YEAR INTRODUCED</u>
APEX	JOHNSON	32		1978
CSAR	SOFTWARE CONCEPTS	9.5 BATCH 17.5-24.5 ON-LINE		
SYSTEM III- CPU SCHEDULER AND DATA CENTER SCHEDULER			200	1969
ON-LINE DATA CENTER MANAGE- MENT SYSTEMS	VALUE	12-30		
	VALUE	49-OS/V5 56-MVS		
UCC 7	UNIVERSITY COMPUTING	47.5		1977
DATA CENTER SCHEDULER	SOFTWARE MODULE MARKETING	6-8	15	1978
DIMENSION V	SDA PRODUCTS	35-60	20	1977
SCHEDULER	SYSTEMATICS	24	10	1978
DCMS	PRODUCTIVITY SOFTWARE	45	8	1980

EXHIBIT VI-8

CAPACITY PLANNING PACKAGES

<u>NAME</u>	<u>VENDOR</u>	<u>PRICE(\$K)</u>	<u>NO. INSTALLED</u>	<u>YEAR INTRODUCED</u>
BEST/I	BGS	19-24.5	150	1978
QUESTOR	PERFORMANCE SYSTEMS/ BOOLE & BABBAGE		NEW	1980?
SNAPSHOT	IBM	MARKETING USE ONLY		

- . The total market is represented by the approximately 3,000 installations with 370/158 or larger machines.
 - . If half of these were prospects for a capacity planning tool, then current market penetration is 10%.
 - . The market should grow as installations are continuously upgrading in size and applications are becoming more complex and critical.
- It is still not clear which product approach or features will be most important and most attractive in the marketplace.
 - Questor and Snapshot are simulation products.
 - Best/I takes a modeling approach.
 - ANR should analyze both products carefully.
 - It is not necessary, at least upon initial entry, to mirror the technical approach taken by the established products or to offer the same functions.
 - . However, as the products mature, they will increasingly converge functionally for competitive reasons. This implies a continuous research and development effort.
 - In any event, the rate of product change is likely to be high.
 - Enhancements.
 - New entrants.

- Integrated products will be a special concern to ANR. There are already indications that this will occur given the announcements from the following:
 - Boole and Babbage.
 - BGS.
 - Productivity Software.
 - After the introduction of such integrated competitive products, the price and complexity of entry will increase considerably.
- Competition should increase. ANR is already behind.
 - The leaders have a two- to three-year headstart.
 - Other likely new entrants have a one- to two-year edge.
 - However, a close analysis of existing products and intelligent probing should allow ANR to close some of the gap and, at least potentially, leapfrog the competition.
 - Consequently, it is important that ANR come out with its "standalone" product relatively quickly before the marketplace is able to distinguish integrated products and probably place a premium on them.

4. CONCLUSIONS

- There is no reason why the market would not accept an ANR product.
 - Buyer interest is increasing.
 - The leading firm (BGS) started very small and was initially unknown. It is now accepted and is doing well.

- BGS is perceived as a specialist and expert in the field.
- An ANR entry strategy should be as follows:
 - Define the smallest practical "package" and implement it quickly.
 - ANR must get established quickly before the competitive "window" closes.
 - ANR's limited resources will make it difficult to introduce or support a more complex initial product.
 - Make sure that the product's quality is high.
 - ANR may only receive a single hearing by the marketplace.
 - It has no reputation in a software context to fall back on.
- Summary.
 - On balance, market factors are favorable for ANR entry. See Exhibit VI-9.
 - The unfavorable factors are those usually associated with any significant product opportunity.
- Recommendations.
 - Future product development should be contingent on an intensive evaluation of existing products and a thorough review of the professional and theoretical literature.
 - The scope of the initial product offering should be such that the development cost is not prohibitive.

EXHIBIT VI-9

CAPACITY PLANNING SOFTWARE: FAVORABLE AND UNFAVORABLE FACTORS

FAVORABLE

- LARGE MARKET
- LOW PENETRATION
- ACCEPT NEW ENTRANTS
- FEW ENTRANTS
- HIGH PRODUCT INTEREST
- INCREASED PRODUCT USE
- LOW SATISFACTION WITH ALTERNATIVES

UNFAVORABLE

- STEEP LEARNING CURVE
- COMPLEX PRODUCTS
- SIGNIFICANT PRODUCT CHANGE EXPECTED

- Continuous testing and product enhancement will be obligatory to remain a factor in the marketplace.

B. COMMERCIAL TIMESHARING SERVICES

I. CURRENT PRODUCT STRUCTURE

- In order to understand the timesharing market in general and ANR's potential for entry, it is necessary to understand the structure of services offered. The major types of timesharing include:
 - Data banks.
 - Examples: New York Times, Data Resources.
 - There is increasing need.
 - It is unfeasible for even the largest users to construct or maintain such data banks themselves because of costs of data collection, updating and storage.
 - These services are being absorbed into information-based companies (example: Dun and Bradstreet).
 - Transaction processing requiring special skills and knowledge in a volatile external environment; examples: payroll processing (ADP, Bank of America) and medical billing (SMS, McAuto).
 - There are indications of some shifting to turnkey systems (example: medical billing).
 - Transaction processing in a stable external environment.

- Examples: Bank service bureaus (On-Line Financial) and auto dealers (Reynolds and Reynolds).
 - There is already a shift to user-site hardware linked to time-sharing vendors (this is more a goal than an achievement) and standalone minis.
- Computer utility.
 - Examples: Statistical and financial analysis; scientific and engineering calculations; advanced languages (Nomad, etc.).
 - This function is the prime target for in-house timesharing and minis.
 - Software that is easy to replicate, with little ongoing logic support, is needed.
 - In-house timesharers can still plug into data banks if required and, at the same time, have access to company data.
- The proposed ANR product would have a large computer utility component and, hence, would be at risk from in-house timesharing and mini/micro computers.

2. CURRENT STATUS AND TRENDS

- There are major forces pulling timesharing, especially utility timesharing, in-house.
 - Data processing management wants to know what is going on and wishes to increase control.
 - Control is virtually an end to itself in many cases.

- Increased efficiency and lower costs are powerful motivators.
- Important integration benefits are possible where the company's operating data can be accessed by a powerful, user-oriented language such as Nomad, previously available on a commercial timesharing basis only.
- Users of timesharing also wish to obtain better control and reduce costs, but, in general, they are more favorably inclined to commercial timesharing because of superior service and support.
- Today's economic climate is a very powerful force in motivating management at all levels to substitute a less expensive service for commercial timesharing.
 - Respondent's were unanimous in saying that cost savings were the most important reason for changing current timesharing arrangements.
 - Slightly less strong was the importance given to the application capabilities of timesharing and its alternatives.
- There are forces encouraging the use of vendor timesharing.
 - The primary factor is the inability of in-house DP to supply resources and knowledge on a timely basis.
 - The objective of the in-house EDP staff is to give up work to outside services temporarily (in principle).
 - Such work is often unprofitable for timesharing firms, especially if the work involves a nonstandard application because of selling and startup expenses.

- The only long-term timesharing that the DP department does not mind giving out are those which meet one or more of the following requirements.
 - . Small jobs.
 - . Very specialized applications.
 - . Jobs involving "problem" users or applications (e.g., highly political, much hand-holding).
- It now appears that the forces pulling timesharing in-house are predominating.
 - Over half the companies interviewed expect to see a decrease in usage by 1983. See Exhibit VI-10.
 - Only one-quarter see an increase.
 - On the average, the companies interviewed see a decline of 42% in dollar terms in the amount of timesharing services their company will purchase between 1979 and 1983.
 - . In many cases, these decreases are the result of projects now underway to bring applications in-house and, hence, are credible.
- Even more striking is the result of INPUT's telephone interviewing where INPUT attempted to find companies with either past, present or future use of commercial timesharing.
 - Initial interviews with large firms at the upper end of the Fortune 500 had indicated that they usually were using commercial timesharing, but were also restraining its use.

EXHIBIT VI-10

EXPECTED CHANGES IN VENDOR TIMESHARING USE: 1979-1983

- NUMBER OF COMPANIES

<u>EXPECTED CHANGE 1979 TO 1983</u>	<u>PERCENT OF COMPANIES</u>
INCREASE IN USE	25%
DECREASE IN USE	58%
NO CHANGE	17%

- TOTAL DOLLAR VALUE

<u>YEAR</u>	<u>AMOUNT OF USE</u>
1979	100%
1980	94%
1983	58%

- Therefore, the hypothesis was constructed that significantly smaller companies at the bottom of the Fortune 1,000 might be more apt to use commercial timesharing due to, for example, their having fewer EDP resources or being more specialized.
- However, if anything, their openness to commercial timesharing is even more open to question, given the results in Exhibit VI-11:
 - . At least 64% of companies have not used nor plan to use commercial timesharing.
 - . This figure rises to 80% if the 22% with whom contact could not be made are disregarded.
- It is probably the case that some of the data processing management personnel interviewed were unaware of all user timesharing or did not wish to recognize its existence. However, it is unlikely that this "hidden" timesharing is large, otherwise it would become identified by most companies' financial reporting and control systems.
- Half of the respondents had in-house timesharing systems. This is consistent with the results from an INPUT subscription study in progress which indicates that while 87% of large companies interviewed used commercial timesharing, all were also using in-house alternatives of one sort or another. See Exhibit VI-12.
- The decline appears to be centered on the computer utility types of applications.

3. COMPETITIVE ENVIRONMENT

- The effects of erosion of the computer utility business can be seen in the behavior of both vendors and customers.

EXHIBIT VI-11

COMMERCIAL TIMESHARING IN THE FORTUNE 900-1,000

<u>TELEPHONE CONTACT RESPONSE</u>	<u>NO. OF FIRMS</u>	<u>PERCENT</u>
NO VENDOR TIMESHARING-PAST, PRESENT, FUTURE	45	64%
CONTACT NOT MADE	15	22%
INTERVIEW CONDUCTED	<u>10</u>	<u>14%</u>
TOTAL	70	100%

EXHIBIT VI-12

ALTERNATIVE INTERACTIVE SYSTEMS IN VERY LARGE CORPORATIONS

VENDOR TIMESHARING	87%
IN-HOUSE TIMESHARING	57%
STANDALONE MINIS/MICROS	53%
INTERNAL NETWORKS	47%
NO IN-HOUSE ALTERNATIVES	0%

- Timesharing vendors are offering other kinds of products for sale, although the benefits seem problematic.
 - User-site hardware supplied by timesharing vendors and linked into their networks do not appear to have been successful so far.
 - Vendors have been offering their proprietary software for sales, their "seed corn": NCSS will sell both its VPSS operating system and its Nomad language.
- Independent software vendors offer packages direct and on timesharing services.
 - "Timesharing services are my best marketing tool" - major vendor.
 - Large users prefer control, finding significant savings in trying out software via timesharing and then buying the package.
- Some timesharing services have taken a very short-range view as exemplified in one-year leases for their equipment.
- Newer, smaller "timesharing" services see timesharing as a vehicle for selling other products:
 - Turnkey systems.
 - Software.
 - Service bureau processing.
- Timesharing customers are organizing themselves to better deal with vendors by means of such things as:
 - Central control and coordination of purchases.

- Formal bidding.
- Benchmarks.
- Aggressive bargaining which can produce significant rate card discounts; example:
 - . On a recent government bid, a firm offered discounts of 90% of its standard rate for the first million dollars in business.
- There are still successful new entrants into "timesharing." They have such characteristics as the following:
 - Industry or function specialized.
 - Low overhead (e.g., DEC).
 - Short-term oriented.
 - Ethically ambiguous.
 - Service bureau-like.
 - Price cutters.

4. CONCLUSIONS

- There is no reason why the market could not be as receptive to an ANR timesharing service as to many other services. However, the following issues would need to be addressed.
 - Existing firms, both large and small, will react aggressively to price cutting by a new entrant.

- ANR would have to work to establish market credibility; example:
 - . Is ANR just temporarily selling extra time?
 - . Will there be the necessary commitment of people and resources?
 - . Will internal ANR work receive priority?
- ANR would have to supply local support, especially if more specialized software were offered.
- There is little question, though, that the more specialized and unique the service that is offered, the greater the chance of success.
- Summary.
 - The unfavorable factors predominate in the current stage of the industry (Exhibit VI-13): There are strongly entrenched market leaders in what appears to be a declining market for general or utility timesharing.
 - Balancing this, to a degree, is ANR's high degree of readiness and the large market.
- Recommendations.
 - The risks and opportunities are such that the aggressive marketing of a general or utility timesharing service should not be attempted now.
 - Utility timesharing could be a natural, low-cost complement for more specialized products that ANR could market via timesharing.

EXHIBIT VI-I3

GENERAL TIMESHARING: FAVORABLE AND UNFAVORABLE FACTORS

<u>VERY FAVORABLE</u>	<u>FAVORABLE</u>	<u>UNFAVORABLE</u>	<u>VERY UNFAVORABLE</u>
<ul style="list-style-type: none"> • LARGE MARKET • POTENTIALLY LARGE REVENUES • ANR COULD BEGIN VERY QUICKLY 	<ul style="list-style-type: none"> • RELATIVELY SMALL ANR INVESTMENT 	<ul style="list-style-type: none"> • ANR WOULD FACE DIFFICULTY IN BECOMING ESTABLISHED IN THE MARKETPLACE • STEEP LEARNING CURVE, COMPLEX PRODUCTS • MAY NEVER ADVANCE BEYOND marginally PROFITABLE ACCOUNTS 	<ul style="list-style-type: none"> • HIGH PENETRATION • INTENSE COMPETITION <ul style="list-style-type: none"> - INCLUDING IN-HOUSE • MARKET LEADERS • VENDOR SECTOR EVOLVING RAPIDLY • INITIAL "TRY OUT" ACCOUNTS

- Local targets of opportunity may exist and should be pursued, since incremental costs would be quite small.
- . However, charges to outside customers would probably have to be at ANR's marginal, not average, costs.

C. FINANCIAL PLANNING CONSULTING AND SOFTWARE

I. CURRENT USE/STATUS

- About half of all financial planning-related functions are now computerized (Exhibit VI-14) in Fortune 500-600 firms interviewed. Larger firms were not sampled, since it was believed that they would be in less need of outside assistance.
- An increase in computerization for long-range planning is foreseen by almost three-quarters of respondents. See Exhibit VI-15.
- However, changes in the overall scope of long-range planning are not foreseen by the vast majority of respondents. See Exhibit VI-16.
- These apparently contradictory responses reflect the conflicting forces behind long-range planning.
- The amount of management involvement in long-range planning is significant. See Exhibit VI-17.
- However, planners themselves are unsure of how to account for or estimate critical events. Previous significant failures mentioned include:
 - . "Oil shock" equivalents.

EXHIBIT VI-14

EXTENT OF COMPUTERIZATION OF FINANCIAL PLANNING FUNCTIONS

<u>EXTENT OF COMPUTERIZATION</u>	<u>AVERAGE # OF FUNCTIONS</u>	<u>PERCENTAGE</u>
COMPUTERIZED	4.7	35%
PARTIAL COMPUTERIZED	2.7	20%
NOT COMPUTERIZED	<u>6.1</u>	<u>45%</u>
TOTAL	13.5	100%

EXHIBIT VI-15

CHANGES IN EXTENT OF COMPUTERIZATION IN LONG-RANGE PLANNING

<u>TYPE OF CHANGE</u>	<u>PERCENTAGE OF RESPONDENTS</u>
MORE COMPUTERIZATION	73%
NO CHANGE	27%
LESS COMPUTERIZATION	0%

EXHIBIT VI-16

CHANGES FORESEEN IN SCOPE OF LONG-RANGE PLANNING

<u>CHANGE IN SCOPE</u>	<u>PERCENTAGE OF RESPONDENTS</u>
MORE PLANNING	14%
LOW PLANNING	7%
NO CHANGE	80%

EXHIBIT VI-17

EXTENT OF MANAGEMENT INVOLVEMENT
IN LONG-RANGE PLANNING

<u>EXTENT OF INVOLVEMENT</u>	<u>LEVEL OF MANAGEMENT</u>	
	<u>TOP MANAGE- MENT GENERALLY</u>	<u>CEO</u>
HIGH	47	40
MEDIUM	27	33
LOW	27	27

- . Inflation.
 - . Reversal of historic relationships of long- and short-term interest rates.
 - . Government policies. Some planners wonder if the "seat of pants" approach is just as good.
- Because of this, the kind of future acceptance of long-range planning is difficult to gauge.
- Potential users of long-range planning software are very demanding.
 - Almost all selection criteria are seen to be of more than medium importance. See Exhibit VI-18.
 - . The most important factors are those dealing with the functions contained and how easy the software is to use.
 - . Almost as important is vendor support and reputation.
 - . Vendor size and number of customers are relatively unimportant.
 - Similarly, all potential features are seen to be of at least medium importance (Exhibit VI-19); few features stand out.
 - . Multidivisional consolidation capabilities must exist for almost two-thirds of respondents.
- At least half of respondents would seek outside assistance in implementing long-range planning systems. See Exhibit VI-20.
 - They would look to specialist consultants and Big 8 firms first.

EXHIBIT VI-18

IMPORTANCE OF FACTORS IN OBTAINING FINANCIAL PLANNING SOFTWARE

<u>IMPORTANCE*</u>	<u>FACTOR</u>
4.5-5.0	<ul style="list-style-type: none">● TIME & EFFORT TO IMPLEMENT● SOFTWARE RELIABILITY● FLEXIBILITY● FORECASTING TECHNIQUES & REPORTS● USABILITY BY NON-DP STAFF
4.0-4.4	<ul style="list-style-type: none">● DOCUMENTATION● LOCAL VENDOR SUPPORT● TRAINING● VENDOR REPUTATION
3.5-3.9	<ul style="list-style-type: none">● CONSULTING ASSISTANCE● PROCESSING COST● CUSTOMER REFERENCE● PURCHASE PRICE● STATISTICAL ROUTINES
2.0-3.0	<ul style="list-style-type: none">● EXISTENCE OF USER GROUP● VENDOR SIZE● NUMBER OF CUSTOMERS

* 5 = HIGH IMPORTANCE, 3 = MEDIUM IMPORTANCE,
1 = LOW IMPORTANCE

EXHIBIT VI-19

IMPORTANCE OF SOFTWARE FEATURES TO USERS

<u>FEATURE</u>	<u>PERCENT OF AVERAGE RATING*</u>	<u>RESPONDENTS THAT "MUST HAVE"</u>
DETERMINISTIC ANALYSIS	3.7	36%
PROBABILISTIC ANALYSIS	3.4	14%
INTERACTIVE SYSTEM	4.0	43%
TIME SERIES FUNCTIONS	2.8	7%
RISK ANALYSIS	2.9	14%
USER-DEFINED LOGIC	4.4	43%
STANDARD FINANCIAL FUNCTIONS	4.4	43%
MULTIDIVISIONAL CONSOLIDATION	4.1	64%
GRAPHICS OUTPUTS	2.9	7%
USER-GENERATED REPORTS	3.9	36%
STANDARD REPORTS	4.0	50%

* 5 = MUST HAVE, 4 = VERY IMPORTANT, 3 = IMPORTANT,
2 = DESIRABLE, 1 = DON'T CARE.

EXHIBIT VI-20

ORGANIZATIONS THAT WOULD SEEK OUTSIDE HELP
IN IMPLEMENTING LONG-RANGE PLANNING SYSTEMS

<u>SEEK HELP</u>	<u>PERCENTAGE</u>
YES	47%
PROBABLY	13%
NO	40%

- An ANR-type company would usually not be chosen. See Exhibit VI-21.
- . This is a key finding.

2. FUTURE TRENDS

- The need for an integrated financial planning system was stress by the more perceptive respondents. Exhibit VI-22 is an amalgam of these views.
 - Such an approach is uncommon now but will probably gain increased acceptance because of the views of such opinion leaders.
- There is already evidence that financial planning systems will be offered in several different modes, often as a sequence; example:
 - A timesharing introduction.
 - Followed by in-house mainframe implementation or,
 - Implementation on a minicomputer or, in the words of one vendor,
 - . "Soon we'll be selling the software and throwing the hardware in for nothing" (referring to the VAX750).

3. COMPETITIVE ENVIRONMENT

- There are many competitive products.
 - First generation products may be fading from the scene; example:
 - . Cuffs (250 sales, including timesharing).
 - . Simplan (70 sales).

EXHIBIT VI-21

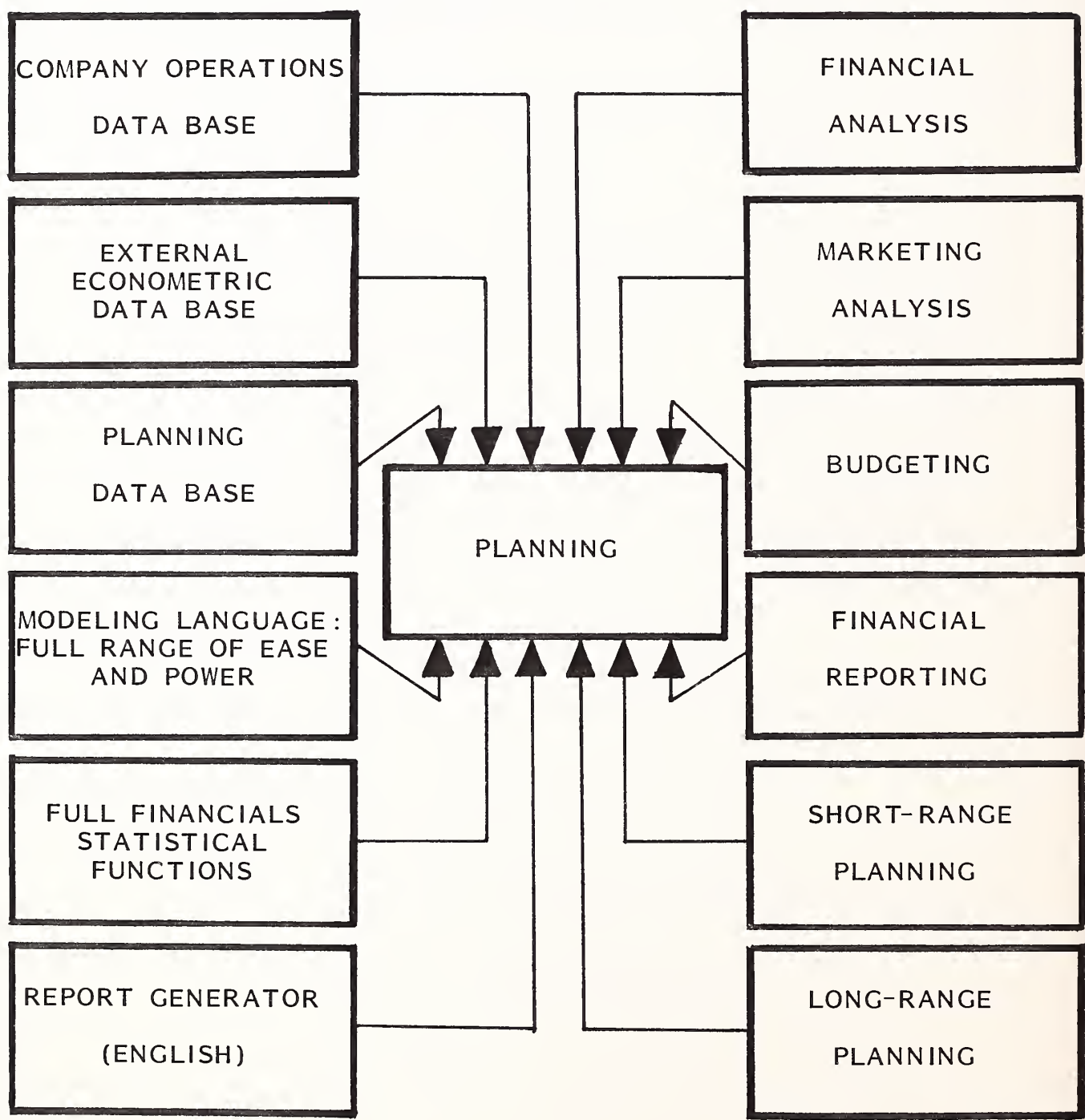
LEVEL OF COMFORT WITH DIFFERENT SOURCES OF FINANCIAL PLANNING CONSULTING AND SOFTWARE

<u>SOURCE</u>	<u>COMFORT LEVEL*</u>
SPECIALIST FINANCIAL PLANNING CONSULTING FIRM	4.1
BIG 8 FIRM	3.2
DP SERVICES FIRM	2.7
TIMESHARING VENDOR	2.6
SUBSIDIARY OF COMPANY IN YOUR INDUSTRY	2.4
COMPUTER HARDWARE MANUFACTURER	2.0

* 5 = VERY COMFORTABLE, 3 = COMFORTABLE,
1 = UNCOMFORTABLE

EXHIBIT VI-22

FINANCIAL PLANNING: INTEGRATION



- Autotab (500 sales, including timesharing).
- There have been major second-generation product entrants in the last four years; example:
- IFPS (Execucom):
 - One hundred twenty sites in four years.
 - Six hundred timesharing users.
- Empire (ADR):
 - One hundred sites in three years.
 - One thousand timesharing users.
- FCS/EPS entering U.S. from Europe.
- Third-generation products are easy to use and powerful. They are also "decision support systems."
 - They represent on the order of 75 man-years of development effort and are priced commensurately (\$200,000 plus).
 - Consulting and support are a major attraction.
 - EXPRESS and EMS are the only products that are now in this category.
- A "fourth generation" may be emerging which takes third- and, possibly, second-generation products and customizes them. There is a high consulting component.

- The fourth generation would often replace purpose-built, obsolescent in-house models similar to ANR's. Example: A Fortune 10 company gave up its own internally-developed model to purchase 26 copies of a vendor model because of high maintenance costs and the lack of features of the company's own software.
- Currently, products and customers can be grouped in four segments. See Exhibit VI-23.
 - Note: Viscalc was taken very seriously by several vendors.
 - It will be interesting to see how long products with such different characteristics (and prices) can coexist in the large company segment.

4. PRODUCTS COMPETING WITH ANR'S PROPOSED SERVICE

- Certain products appear directly competitive with that proposed by ANR. See Exhibit VI-24.
 - All offer credible consolidation features.
 - The price ranges vary dramatically.
 - All products offer considerable support and consulting; in some the consulting component is very large.
- The IPAC software is especially interesting since it appears somewhat similar to ANR's software.
 - The IPAC software has been successfully tested by a major corporation for long-range planning purposes in a similar environment to ANR.
 - The firm has capital-intensive, long-payoff projects.

EXHIBIT VI-23

SEGMENTATION OF PRODUCTS AND CUSTOMERS

<u>CUSTOMER SIZE</u>	<u>MINIMUM NUMBER OF POTENTIAL CUSTOMERS</u>	<u>PRODUCT PRICE</u>	<u>PRODUCT EXAMPLES</u>	<u>EQUIPMENT</u>
ANY PERSON OR BUSINESS	10 ⁶	\$ 100	VISICALC	RADIO SHACK
MOST BUSINESSES	10 ⁵	\$ 3,000	FPL	Z80
\$10 MILLION +	10 ⁴	\$20,000- \$40,000	MAPS, FINAR	PDP II
\$200 MILLION +	10 ³	\$50,000- \$80,000 200,000	EMPIRE IPAC (EST.) EXPRESS,EXSIM	PDP20 PRIME

EXHIBIT VI-24

COMPETITIVE PRODUCTS

- EMPIRE
 - ADR SOFTWARE FOR IBM AND DEC HARDWARE
 - OFFERED ON MANY TIMESHARING SERVICES
- EMS
 - ECONOMIC SCIENCES SOFTWARE
 - AVAILABLE ONLY ON NCSS
- EXPRESS
 - MANAGEMENT DECISION SYSTEMS SOFTWARE
 - AVAILABLE FOR IN-HOUSE HARDWARE OR TYMSHARE
- IPAC
 - PAC SYSTEMS SOFTWARE
 - NOW AVAILABLE ONLY ON ON-LINE SYSTEMS' TIMESHARING SERVICE
 - PRIME-BASED VERSION TO BE OFFERED IN 1982
- XSIM
 - IDC SOFTWARE
 - OFFERED ONLY ON IDC TIMESHARING
- ALL THE ABOVE OFFER CONSOLIDATIONS

- . It has extensive consolidations, significantly more complex than ANR.
- The IPAC package was relatively easy to use and modify by this customer; little consulting was needed.
- . This positive experience occurred in spite of the customer having little exposure to data processing and an unsophisticated long-range planning section.
- IPAC's consolidation features are especially powerful and efficient according to the user company. Example:
 - . Eliminations are handled automatically with debit/credit accounting.
- IPAC has found market resistance because its product is unlike those of the leading companies.
 - . It is much more "spreadsheet" oriented.
- There is apparently still a growing market.
- Timesharing services are marketing tools.

5. MARKET ENTRY

- The number of vendors is probably concentrating.
 - Many early, smaller vendors are apparently inactive.
 - There are major vendors in the upper end of the market.
 - . Empire (ADR).

- . Simplan.
 - . IFPS (Execucom).
 - . Express (IDC).
- Profitability varies between vendors. Financial planning software is the most profitable line in a major software company.
 - Many others (even large sellers) appear to receive marginal financial returns.
- Market entry could be relatively easy even now, with a limited product being sold to a few sites.
 - Then, there would be a steep learning curve to maintain product, add features and make sales.
 - . An example is a new entrant with six software releases in three years and few sales.
 - The breakeven appears to be around 25 sales (for each machine supported).

6. CONCLUSIONS

- Summary.
 - The market factors are basically favorable:
 - . It is a growing market which has accepted new entrants. See Exhibit VI-25.

EXHIBIT VI-25

FINANCIAL PLANNING PRODUCT: FAVORABLE AND UNFAVORABLE FACTORS

<u>FAVORABLE</u>	<u>UNFAVORABLE</u>	<u>VERY UNFAVORABLE</u>
<ul style="list-style-type: none">● MARKET HAS BEEN UNSTABLE IN PAST (BUT DIDN'T HAVE ESTABLISHED LEADERS)● INCREASING INTEREST IN AND USE OF FINANCIAL PLANNING● TOP MANAGEMENT INTEREST	<ul style="list-style-type: none">● ESTABLISHED LEADERS● COMPLEX PRODUCTS, STEEP LEARNING CURVE● SIGNIFICANT PRODUCT CHANGE EXPECTED● EXISTING PERFORMANCE OF FINANCIAL PLANNING NOT ENCOURAGING● SIGNIFICANT VENDOR DROP OUT RATE	<ul style="list-style-type: none">● ANR WOULD FACE DIFFICULTY IN BECOMING ESTABLISHED IN MARKET-PLACE● INTENSE COMPETITION

- However, current market leaders are well-established and offer very comprehensive products, some of which have extensive consulting components.
- There was a great deal of opportunity for a new entrant several years ago, but there is less now.
- Entry would have a significant price.
 - . It would be necessary for ANR to have its own state of the art modeling language.
 - . ANR would have to offer a full range of functions to be competitive, even if many functions were used rarely.
- By far, the worse problem for ANR is that it does not have the requisite image of expertise nor can its name guarantee a seal of approval.
- Recommendation.
 - It is unlikely that ANR can come up with a product edge that would allow it to compete successfully. Consequently, it is recommended that ANR not pursue commercial exploitation of this product under current conditions.

VII MARKET ENTRY: RECOMMENDATIONS

VII MARKET ENTRY: RECOMMENDATIONS

A. SUMMARY

- All the products/services analyzed appear satisfactory from the standpoint of the needs and likely usage by potential customers. See Exhibit VII-1. (Note: Estimates have also been provided for the "core" energy/transportation product group.)
 - Product usage is expected to increase, except for general (utility) timesharing.
 - Satisfaction with current products is on the low side, but this is good from an entry standpoint.
 - Except for timesharing, there are no credible alternatives for potential customers to the type of product/service envisioned by ANR.
- The impact of market-based factors on ANR's proposed products and services varies considerably. See Exhibit VII-2.
 - General timesharing offers a potentially large market; however, the level of existing penetration and the competitive level is correspondingly high.

EXHIBIT VII-I

POTENTIAL BUSINESS AREAS: USAGE/NEED FACTORS

FACTOR	ENERGY/ TRANSPORTATION RELATED*	FINANCIAL		CAPACITY		GENERAL TIMESHARING*
		PLANNING SOFTWARE/ CONSULTING*	PLANNING SOFTWARE*	PLANNING SOFTWARE*	PLANNING SOFTWARE*	
<u>INTEREST IN PRODUCT</u>						
<u>PRODUCT USE</u>						
● NOW	3	4	4	4	5	
● FUTURE	3	2	2	2	4	4
	4	3		4	2	
<u>PRODUCT EFFECTIVENESS</u>						
● NOW	2	2		2	4	
● FUTURE POTENTIAL	4	3		3	4	
<u>PRODUCT SATISFACTION (CURRENT)</u>						
● DP DEPARTMENT	?	3		2	1	
● USER DEPARTMENT	?	2		2	4	
● TOP MANAGEMENT	?	3		3	3	
<u>PRODUCT ALTERNATIVES</u>						
● EFFECTIVENESS	?	2		2	4	
● ACCEPTABILITY	?	1		1	3	
<u>IMPORTANCE IN BUYING PROCESS</u>						
● DP DEPARTMENT	2	3		5	4	
● USER DEPARTMENT	4	4		0	5	
● TOP MANAGEMENT	3	4		0	1	

* 1 = LOW, 3 = MEDIUM, 5 = HIGH (ESTIMATES)

EXHIBIT VII-2

POTENTIAL BUSINESS AREAS: MARKET FACTORS

FACTOR	ENERGY/ TRANSPORTATION RELATED*(a)	FINANCIAL		CAPACITY PLANNING SOFTWARE*	GENERAL TIMESHARING*
		PLANNING SOFTWARE/ CONSULTING*	PLANNING SOFTWARE*		
ANR RECOGNITION	5	2	1	2	
ANR OVERALL IMAGE	4	2	1	2	
ANR INITIAL ACCEPTANCE	5	1	3	2	
MARKET SIZE (b)	1	3(c)	4	5	
LEVEL OF VENDOR PENETRATION	5	3	4	1	
REVENUE BY CLIENT (d)					
● INITIAL	2	3	2	1	
● ONGOING	2	1	1	2-5	
INTENSITY OF COMPETITION	4	1	3	1	
RECENT ACCEPTANCE OF NEW ENTRANTS	?	4	4	4	
COMPETITIVE STRUCTURE					
● ESTABLISHED LEADERS	4	2	3	1	
● NUMBER OF NEW ENTRANTS	1?	3	4	3	
● CONCENTRATION	4?	2	3	2	
LEARNING CURVE FOR ANR	4	2	2	2	
PRODUCT COMPLEXITY	4	2	2	3	
RATE OF PRODUCT CHANGE	3?	2	2	1	

* 1 = VERY UNFAVORABLE, 3 = NEUTRAL, 5 = VERY FAVORABLE (ESTIMATE)
SEE NOTES (a) to (d) ON NEXT PAGE

EXHIBIT VII-2

POTENTIAL BUSINESS AREAS: MARKET FACTORS - (continued)

- NOTES:
 - (a) ESTIMATES
 - (b) MARKET SIZE:
 - 1 = UNDER 100 BUYING UNITS PER PRODUCT
 - 2 = 100-500,
 - 3 = 500-1,500
 - 4 = 1,500-3,000
 - 5 = OVER 3,000
 - (c) MULTIPLE SALES PER BUYING POINT POSSIBLE
 - (d) REVENUES:
 - 1 = UNDER \$20K/SALE
 - 2 = \$20-100K
 - 3 = \$100-\$500K
 - 4 = \$500K-1 MILLION
 - 5 = OVER \$1 MILLION

- The industry appears to be entering a period of considerable instability and change, with new entrants being quite unlike the established firms.
 - ANR would not have a particularly strong image or recognition factor and might have to struggle to achieve credibility.
 - Successful products would have to be specialized and offer the opportunity for migration off of timesharing.
- Capacity planning software appears to offer considerable opportunities because of a growing market with relatively few products now competing.
 - ANR's lack of a track record is not likely to prove a barrier to entry.
 - Product complexity and the rate of product change mean that development and enhancement demands will be high.
- Financial planning software and consulting currently have a large number of vendors offering complete products: few needs appear to be unmet.
 - ANR's image may prove to be an insuperable hurdle; it would have to invest significant resources to achieve recognition as an expert financial consultant.
 - All products in this sector appear likely to undergo considerable change and enhancement, again requiring a significant investment by ANR to be competitive.

B. RECOMMENDATIONS

- ANR should develop a portfolio of energy/transportation products and services; this would be the "core business."
 - ANR should establish marketing tie-ins to timesharing services and, possibly, complementary software firms (e.g., Cullinane).
 - Because competition now appears relatively low, the core business should be expanded aggressively.
 - ANR should consider ties to related software houses and consultants in order to tie down as much of the market as possible.
- ANR could profitably to offer its own timesharing vehicle for core products.
 - However, if this is done, it may be harder to establish an effective marketing tie-in with established timesharing service.
 - In any event, ANR can use its expertise in offering consulting services and associated software to firms wishing to set up in-house timesharing operations.
- ANR should proceed with developing its capacity planning software.
 - Existing products should be intensively evaluated to see which approaches and features can be offered and the particular niche the initial ANR offering would fit into.
 - ANR's objective should be to offer as limited a product as is consistent with filling a market gap.

- ANR should not try, in its initial offering, to compete head to head with BGS or Boole and Babbage.
 - Entry time and expense would be too high if a full-blown product were developed.
- ANR should not proceed with commercial development of a financial planning consulting and software product for the following reasons:
 - ANR's software is obsolescent and would not be competitive; significant time and expense would be needed to rectify this problem.
 - The market wishes to purchase consulting services for financial planning from specialist firms.

APPENDIX A: ANR INTERVIEWS

APPENDIX A: ANR INTERVIEWS

<u>SUBJECT</u>	<u>PERSON</u>	<u>TIME & DATE</u>	<u>COMMENTS</u>
ENVIRONMENTAL DATA BASE	CENCER LOJINESS	2:30 THURS.	2171
PIPELINE SIMULATION	LIETZ	10:30 THURS.	4348
BLIND BIDDING	SHARON	10:00 FRIDAY	
CORPORATE STRATEGIC PLNG.	WHETSTONE	1:30 THURS.	3411
CAPACITY PLNG.	BURKSTRAND TIMKO	9:30 WED.	
LOGISTICS ON MOVING COMPUTERS	BIENKOWSKI O'BRIEN	1:00 WED.	
CMS TIMESHARING	CARLSON BUGEAUD SAVALLISCH RISINGER	4:00 WED. 4:00 THURS. 9:00 THURS.	
ACQUISITION	KRAMER	9:00 FRIDAY	5329

APPENDIX B: INTERVIEW GUIDE - ANR
USERS OF SERVICES

INTERVIEW GUIDE

ANR USERS OF SERVICES

INTRODUCTION

I am Tom O'Flaherty. I'm a consultant working with ANR to identify DP software and services that might be offered to other companies.

I am talking to you to get a better understanding of how you use these services, how valuable they are to you, as well as any ideas you might have in making ANR software more attractive to outside customers.

I would like to talk to you about the services and systems that you use that you feel are the most significant and important to you. Please tell me how they are important to you.

<u>SYSTEM/SERVICE</u>	<u>WHY IMPORTANT</u>	<u>RANKING*</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

* Are some more important than others?

I would like to explore these in more depth, but before I do, do you have any questions?

We will take the services one by one starting with _____.

1a. Tell me how this system is generally used.

1b. What type of person (title) and how many people use the service?

1c. How long have you been using it?

2a. What do you like best about it?

2b. Least?

3. I am going to hand you a sheet with a list of performance factors that can be rated from excellent to inadequate. You do not have to fill it out (I'll do that), but just talk about each point. (Hand over Attachment 1).
4. Next I would like to do the same thing but using factors that are more general assessments (Hand over Attachment 2).
5. If this system were no longer available to you, what would you do? (Don't read list, but prompt as needed.)

Would stop doing function.

Would do it manually.

Would use a previously known/used T/S service.

Would find a T/S service that offers it.

Would rather have system rewritten.

Other. _____

6. Are there any of your needs which the system does not fill?

YES () NO ()

If yes, explain (including how system could be modified).

7. Are there any parts of the system which you feel are proprietary (i.e., would hurt ANR competitively if other companies had the service made available to them)?

YES () NO ()

What kind of damage?

Cannot be quantified?

What parts of the system would have to be withheld from the market?

8. Do you have any suggestions as to how this system/service could be best marketed?

ATTACHMENT #1

[illegible]

ATTACHMENT #2

	RATING					Comment
	<u>High</u>		<u>Medium</u>		<u>Low</u>	
	5	4	3	2	1	
General Assessment						
Value to user (High = "Couldn't do without it")						
Uniqueness (High = "Couldn't do manually; know of no alternate source")						
Usage (Quantify, if possible)						
Now						
A year ago						
A year from now						
Overall level of satisfaction						
Now						
6 months ago						
12 months ago						

PRODUCT SELECTION FACTORS

The following factors are proposed as a screen to rank potential ANR products and services for marketing commercially. All of these factors can be applied using internal ANR data and knowledge. (External factors such as market size, competitive situation, etc. would be evaluated in the second phase.)

To assist in evaluating, each factor has been "scaled" (e.g., ANR user acceptance is "high", "medium" or "low") and a numeric value (from 1 to 20) has been assigned to each. Higher values are more desirable; a perfect score would be 100.

Two factors would "knock out" a product from further consideration.

- If a significant portion of a product were deemed proprietary (and therefore, no compelling product could be offered).
- If there were significant legal encumbrances on offering software for sale (such as contractual restrictions in software purchased or leased from a third party).

The "U" in parentheses means that interviews with ANR users will be an important input; the "DP" means that most of the information can be supplied by the DP department.

FACTORS

- Current product features (U, DP):
 - Fill all needs (20)
 - Fill many needs (8)
 - Fill some needs (4)
 - Less than above (1)

- Product extensions planned (DP):
 - Many (5)
 - Some (3)
 - Few (1)
- Current ANR user acceptance of product (U):
 - High (10)
 - Medium (5)
 - Low (1)
- Current personnel depth. The extent to which the ability to support/enhance product would be significantly affected if (DP):
 - 8 people leave (5)
 - 4 people leave (3)
 - 2 people leave (1)
- Proprietary nature of product (DP):
 - No proprietary features (5)
 - Some proprietary features (1)
 - Significant portion of product proprietary (knock out).

- Legal encumbrances on software (DP):
 - No limitations (5)
 - Some limitations (1)
 - Significant limitations (knock out).

- Product revenue generation capacity, i.e., if demand were unlimited (without significant changes to product) (DP/INPUT)
 - Over \$5 million (10)
 - Between \$5 and \$.5 million (5)
 - Under \$.5 million (1)

- Additional investment required to make product marketable (DP):
 - Under \$25,000 (5)
 - \$25,000-\$100,000 (3)
 - Over \$100,000 (1)

- Royalty payments required (DP):
 - None (5)
 - Moderate (3)
 - Significant (1)

- Existing service/support quality (U):

- Excellent (10)

- Good (5)

- Fair (1)

- Assessment of uniqueness (U):

- Unique (20)

- Some unique features (10)

- Not unique (1)

APPENDIX C: CAPACITY PLANNING: USER QUESTIONNAIRE

CAPACITY PLANNING: USER QUESTIONNAIRE

*Indicated questions that may be omitted if there is not sufficient time (e.g., in some telephone interviews.)

1. This study is examining:

COMPUTER SYSTEMS PERFORMANCE MEASUREMENT

COMPUTER SYSTEM OPTIMIZATION

CAPACITY PLANNING

(Please tell me what each of these means to you in terms of functions performed and software used.)

2a. So that I have an overview of your operations, tell me the major hardware and software you are using now (1981) and whether there have been any significant changes in the past year or if any are expected next year (1982).

● How many professionals are in the data processing department?

What is your current budget for hardware, software and personnel?

<u>RESOURCES</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	1981 <u>BUDGET</u> <u>(\$ MILLION)</u>
Hardware				\$ _____
CPU (model #)	_____	_____	_____	
Disks (spindles)	_____	_____	_____	
Terminals (#)	_____	_____	_____	
Software				\$ _____
Op. Sys.	_____	_____	_____	
(Data Base) DBMS	_____	_____	_____	
Commun. Monitor	_____	_____	_____	
Other	_____	_____	_____	
Personnel (professional)	_____	_____	_____	\$ _____
TOTAL				\$ _____

2b. What portion of the above are under the direct control and responsibility of the data processing department?

_____ %

Describe user operated and DDP hardware.

2c. What rate of hardware expansion do you expect over the next five years?

3a. How important is computer system performance measurement to the management of your computer operations? (5 = high, 3 = medium, 1 = low)

- Why?
- How important was it three years ago?
- Why?

3b. The following are components of performance measurement and improvement. What are you doing now in each area (if computerized, the source of hardware or software) and what are your future plans (and timeframe)?

	<u>DP?</u>	<u>DESCRIPTION/SOURCE</u>	<u>IMPOR-</u> <u>TANCE*</u>	<u>SATIS-</u> <u>FACTION*</u>	<u>PLANS/YR.</u>	<u>REASONS/</u> <u>COMMENTS</u>
CPU Utilization	_____	_____	_____	_____	_____	_____
Device Utilization	_____	_____	_____	_____	_____	_____
Activity Measurement (e.g., Channels)	_____	_____	_____	_____	_____	_____
System utilization	_____	_____	_____	_____	_____	_____
Throughput Measurement	_____	_____	_____	_____	_____	_____
Direct Access Device Optimization	_____	_____	_____	_____	_____	_____
Job Accounting	_____	_____	_____	_____	_____	_____
Chargeback	_____	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____	_____

* 5 = High; 3 = Medium; 1 = Low

3c. If a chargeback system is used:

- At what level does control exist? (job, task, etc.)?

- What is used in the pricing algorithm?

- CPU.
- I/O usage (EXCP'S).
- Class.
- Priority.
- Other.

- What problems do you have and how do you plan to alleviate them?

3d. Do any of the performance measurement software tools:

- Use graphics? YES () NO ()
- Operate in real time? YES () NO ()
- Future plans for graphics/real time tools? YES () NO ()

3e. How much do the use of these tools increase your:

	<u>THROUGHPUT</u>	<u>RESPONSE TIME</u>
● Percent improvement	_____	_____
- Variance in estimate (+/-)	_____	_____
- Basis for estimate	_____	_____
● Additional improvement Possible (%)	_____	_____
- Rationale	_____	_____

3f. Are you aware of any other hardware or software performance measurement packages?

<u>PACKAGE NAME</u>	<u>SOURCE OF KNOWLEDGE</u>	<u>OPINION</u>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>

3g. What is your biggest unmet need?

4a. How do you plan your hardware changes (additions, upgrades) now?

● What is the general process?

● Who is responsible?

4b. What software tools do you use?

4c. How accurate has your projecting been, i.e., how close (in %) are your 6-12 month estimates? Why? Has it improved over time?

4d. Is this margin of error satisfactory? Why? What have you done to improve it?

4e. What changes do you plan and why?

5a. We would like to explore the kinds of functions that would be most useful to you in projecting your hardware requirements. In general, what level of accuracy would you like to have the further you get into the future? What level are you now attaining? Express as a percent variation.

TIME INTO FUTURE	VARIANCE (% , + OR -)	
	TARGET	PRESENT
1 mo.		
3 mos.		
6 mos.		
1 yr.		
1½ yrs.		
2 yrs.		
3 yrs.		
5 yrs.		
Max.=		

5b. Of the following functions involved in projecting hardware requirements, how do you deal with these now and how important is the function, how satisfied are you with what you're doing now and what are your plans for change?

	DP?	DESCRIPTION	IMP.* CE	SAT.*	PLANS
Hardware Projections					
CPU					
Direct Access Devices					
Terminals					
Communications (Lines, controllers)					
Trending/Methodology					
Straight Line					
Other					
Seasonality Factor					
User Demand Estimates					
Percent Changes					
In User Terms (e.g., Sales into transactions)					
Output Types					
Graphics					
Interactive "what ifs"					
Projections By User Dept.					

* 5 = High; 3 = Medium; 1 = Low.

5c. Are you aware of any software packages for projecting hardware requirement?

<u>PACKAGE NAME</u>	<u>SOURCE OF KNOWLEDGE</u>	<u>OPINION</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. How much interest would you have in a "financial optimization" system which would interface with hardware requirements projection software so that the performance tradeoffs could be analyzed between equipment costs and different hardware configurations? This would probably be a complex system and would include:

- A data base of hardware specifications and costs.
- Vendor and third party purchase, lease and rental plans.
- Current and projected interest rates.
- Tax and depreciation rules.
- Accounting and depreciation conventions used by individual installation companys.

PLEASE DISCUSS

- *7. What are the principal reasons you have for wanting to improve your projecting of future hardware requirements? (5 = high importance; 3 = medium importance; 1 = low importance)

<u>REASON</u>	<u>IMPOR- TANCE</u>	<u>COMMENT</u>
You (respondent) don't like surprises.	_____	_____
Your superiors don't like surprises.	_____	_____
Better (more timely) budgeting	_____	_____
More likely to get hardware requests approved.	_____	_____
Easier to get hardware requests approved.	_____	_____
Requests for approval will have more credibility.	_____	_____
Can provide better service to users.	_____	_____
Can get more throughput from existing confirmation.	_____	_____
You want better control over your operations.	_____	_____
To save money.	_____	_____

- *8. Who is responsible for evaluating, recommending and approving purchases of performance measurement software (department and title)?

*9. Would you say that your department has a high (5), medium (3), or low (1) understanding of prformance measurement and capacity planning issues?
Why?

- In what area is improvement needed?

- How do you obtain knowledge (give specific examples)?

- Seminars.
- Books/publications.
- Subscription services (Datapro, INPUT, etc)

10a. What kinds of performance measurement software tools that you don't have now are you looking to vendors to supply?

10b. Do these exist, to your knowledge?
YES () NO ()

- If yes, what are they?

- If no, what will you do in the meantime?
() Nothing. () Do it yourself.

*11. If your company were to select an outside vendor's software package in this area please indicate the extent to which each of the following factors would be of high, medium or low importance in reaching the decision?

<u>FACTOR</u>	<u>IMPORTANCE OF FACTOR</u>				
	<u>HIGH</u>		<u>MEDIUM</u>		<u>LOW</u>
	5	4	3	2	1
Geographic location of the vendor	_____	_____	_____	_____	_____
Vendor size, financial resources	_____	_____	_____	_____	_____
General reputation of vendor	_____	_____	_____	_____	_____
References from current customers	_____	_____	_____	_____	_____
Number of current customers	_____	_____	_____	_____	_____
Time and effort required to implement	_____	_____	_____	_____	_____
Amount of support/training offered	_____	_____	_____	_____	_____
Cost*	_____	_____	_____	_____	_____
Reliability (errors, downtime)	_____	_____	_____	_____	_____
Features offered	_____	_____	_____	_____	_____
Flexibility (ease of use)	_____	_____	_____	_____	_____
Usability by non-DP personnel	_____	_____	_____	_____	_____
Efficiency (system resources used)	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

*If possible, give an acceptable price range = \$ _____

- Of factors ranked "5", are some more important than others?

YES () NO ()

*12. What do you see as the overall trends in computer systems measurement and capacity planning over the next five years?

- What impact do you from such specific events as:

- Falling hardware prices.
- Standalone, user operated systems.
- Distributed data processing.

**APPENDIX D: CAPACITY PLANNING
VENDORS INTERVIEWED**

APPENDIX D: CAPACITY PLANNING VENDORS INTERVIEWED

- ADR
- BGS
- Boole and Babbage
- Burroughs
- IBM
- Institute For Software Engineering
- Productivity Software
- Tandem

APPENDIX E: CAPACITY PLANNING:
VENDOR QUESTIONNAIRE

CAPACITY PLANNING: VENDOR QUESTIONNAIRE

- 1a. What advantages do you see your firm's system performance measurement software having over other vendor offerings in filling the following functions.

CPU UTILIZATION MEASUREMENT

DEVICE UTILIZATION MEASUREMENT

ACTIVITY MEASUREMENT (e.g., paging rates, channel utilization)

SYSTEM UTILIZATION

THROUGHPUT MEASUREMENT

DASD OPTIMIZATION

JOB ACCOUNTING

CHARGEBACK

OTHER

1b. What hardware/software environment does your software run in?

1c. Does your software:

Produce graphic output?

YES () NO ()

If no, will it in the future?

YES () NO ()

Offer interactive features?

YES () NO ()

2a. What kind of payoff can the typical user of your package(s) expect?

- Quantitative measures (documented?)

- Percent increased throughput.

- Increased response time.

- Cost avoidance.
- Other.
- Qualitative measures.
 - Better service (define).
 - Other.

- Do benefits to a client installation vary depending on the size of the installation and its type of workload? How?

2b. Is data processing management typically aware of these benefits?

YES () NO ()

If no, why not?

2c. How much market do you think is still left for you and your competitors (i.e., not using vendor packages)?

2d. Who do you see as your chief competitors?

3a. How long have you been offering these software product(s)?

3b. How many installations are using it/them?

3c. What do you expect the sales increase to be over the next 1-3 years? Why?

- 1982.

- 1984

3d. Why?

4. From your perspective, what unmet needs for performance measurement software do data processing installations have?

How will you meet them?

5a. What additional features do you plan to be offering customers in the next 1-2 years? Why?

5b. For features not offered now or in the future (based on answer to 1a): Why?

6. In general, what are you doing/planning to do to assist users in projecting their computer system capacity needs in the future (6 month - 5 year time frame)?

Do you think that the need for projecting capacity needs will be more important in the future?

7. Which of the following projection functions do you see as important and why?
Are you planning to offer any yourself in the foreseeable future?

	IMPORTANCE*	REASON	PROBABILITY OF OFFERING*	REASON
Hardware Projections				
CPU				
Direct Access Devices				
Terminals				
Communications (Lines, controllers)				
Trending/Methodology				
Straight Line				
Other				
Seasonality Factor				
User Demand Estimates				
Percent Changes				
In User Terms (e.g., Sales into transactions)				
Output Types				
Graphics				
Interactive "what ifs"				
Projections By User Dept.				

8. How much interest do you think there would be in a "financial optimization" system which would interface with hardware requirement projection software so that the performance tradeoffs could be analyzed between equipment costs and different hardware configurations? This would probably be a complex system and would include:

- A data base of hardware specifications and costs.
- Vendor and third party purchase, lease and rental plans.
- Current and projected interest rates.
- Tax and depreciation rules.
- Accounting and depreciation conventions used by individual installation companies.

PLEASE DISCUSS.

9. Would you say that the typical data processing installation has a high (5), medium (3) or low (1) understanding of performance measurement and capacity planning issues? Why?

10. What do you believe are the chief factors behind a company selecting a particular software product in this area? Rate each factor from: High (5); Medium (3); Low (1)

IMPORTANCE OF FACTOR

<u>HIGH</u>		<u>MEDIUM</u>		<u>LOW</u>
5	4	3	2	1

Geographic location of the vendor	_____	_____	_____	_____	_____
Vendor size, financial resources	_____	_____	_____	_____	_____
General reputation of vendor	_____	_____	_____	_____	_____
References from current customers	_____	_____	_____	_____	_____
Number of current customer	_____	_____	_____	_____	_____
Time and effort required to implement	_____	_____	_____	_____	_____
Amount of support/training offered	_____	_____	_____	_____	_____
Cost*	_____	_____	_____	_____	_____
Reliability (errors, downtime)	_____	_____	_____	_____	_____
Features offered	_____	_____	_____	_____	_____
Ease of use	_____	_____	_____	_____	_____
Flexibility	_____	_____	_____	_____	_____
Usability by non-DP personnel	_____	_____	_____	_____	_____
Efficiency (system resources used)	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

* Acceptable price range = \$_____

11. What do you see as the overall trends in computer systems measurement and capacity planning over the next five years?

- What impact do you feel from specific events as:
 - Falling hardware prices.
 - Standalong, user operated systems.
 - Distributed data processing.

APPENDIX F: USER QUESTIONNAIRE:
TIMESHARING

USER QUESTIONNAIRE - TIMESHARING

Ia. So that I can get an idea of the importance of timesharing to your firm could you estimate the relative importance to you of:
*High (5); Medium (3); Low (1)

IMPOR-
TANCE

- In-house developed software run on your own hardware? _____
- Vendor-supplied software run on your own hardware? _____
- Timesharing services? _____

REASONS:

Ib. Why, in general, does your firm use timesharing services?

- 2a. What do you estimate you spent on vendor timesharing services in 1979 and 1980, and will spend in 1981 and 1983?
- What is the reason for the rate of change?

<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1983</u>	<u>REASON FOR CHANGES</u>
-------------	-------------	-------------	-------------	---------------------------

I. What has been/will be your total use of vendor T/S (\$ million)?

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

2b. Have you replaced — or are you planning to replace — vendor timesharing services with alternatives?

Please give year and extent of replacement (dollars transferred or saved or percent of function transferred).

- In-house timesharing.
- User site hardware supplied by timesharing vendors.
- Turnkey systems.

3. For what functions do you use vendor T/S? (\$, if known; trends otherwise)

	<u>\$ SPENT</u>	<u>IMPORTANCE OF T/S</u>	<u>FUTURE USE OF TIMESHARING</u>
• Financial analysis	_____	_____	_____
• Marketing analysis	_____	_____	_____
• Scientific routines	_____	_____	_____
• Industry specific (describe)	_____	_____	_____
• Interactive transaction processing	_____	_____	_____
• Data base inquiry (describe)	_____	_____	_____
• Batch processing	_____	_____	_____

4. What is your judgement of each of the vendor timesharing services you now receive?

Vendor = _____

*(5 = High, 3 = Medium, 1 = Low)

	<u>SATISFACTION*</u>	<u>REASONS</u>	<u>CHANGES PLANNED</u>
Range of software offered	_____	_____	_____
Reliability of:			
- Software.	_____	_____	_____
- Hardware	_____	_____	_____
- Data.	_____	_____	_____
Training/documentation	_____	_____	_____
On-going support	_____	_____	_____
Cost	_____	_____	_____
- Charge structure.	_____	_____	_____
- Amount charged.	_____	_____	_____
Technical features (e.g., graphics) (Describe)	_____	_____	_____
Other	_____	_____	_____

5. What are the attitudes within your firm toward using multiple timesharing vendors?
(5 = favorable; 3 = neutral; 1 = unfavorable)

	<u>ATTITUDE</u>	<u>REASON</u>
Corp. Management	_____	_____
User Departments	_____	_____
Data Processing Dept.	_____	_____

6. Do you evaluate alternatives to your present timesharing vendor(s) on a regular basis?

- Other T/S vendors.
- In-house options.
- How often?
- How?

7. Have you changed or added T/S vendors in the last two years?

- If no, why not?
- If yes, what were the reasons for doing so? (5 = High importance, 3 = Medium importance, 1 = Unimportant) (Don't prompt if possible.)
 - Reliability.
 - Cost.
 - Software offered.
 - Capabilities.
 - Ease of use.

- Support.
 - . Training.
 - . Technical.
- Technical features (e.g., graphics, describe)
- Other.

8. Do you have plans to change or add T/S vendors in the next 1-2 years?

- If no, why not.

- If yes:

- How definite are your plans (5 = Contract signed, 4 = Vendor selected, 3 = Definite plans, 2 = Looking, 1 = Possibility)
- What selection criteria will you use? (5 = High importance, 3 = Medium importance, 1 = Unimportant) (Don't prompt, if possible.)
 - . Reliability.
 - . Cost.
 - . Software offered.
 - 1. Capabilities.
 - 2. Ease of use.

- . Support.

- 1. Training.

- 2. Technical.

- . Technical features (e.g., graphics, describe).

- . Other.

9. How do you judge the costs of different outside T/S services.

- Benchmarks.

- In-house prepared.

- Outside service.

- Other.

10. How do you evaluate the cost options of using outside T/S services in general versus using an in-house option? These options include:

- User site hardware service (supplied by T/S vendor).

- In-house timesharing.

- Turnkey system.

11a. How is T/S administered.

- Central control.
- Central coordination.
- Decentralized.
- Other/combination (describe).

12a. How does the selection process work for finding, evaluating, recommending and approving a timesharing vendor?

<u>ACTIVITY</u>	<u>RESPONSIBLE</u>	
	<u>DEPARTMENT</u>	<u>TITLE</u>
Finding T/S vendor	_____	_____
Finding T/S packages	_____	_____
Evaluating vendors general qualifications	_____	_____
Evaluating costs	_____	_____
Recommending a vendor	_____	_____
Approving use of a vendor	_____	_____

12b. Do any of these steps vary depending on the department, function or dollar amount involved?

- If yes, how?

13. What are the present in-house data processing capabilities?

	<u>VENDOR</u>	<u>MODEL</u>	<u>NUMBER</u>
CPU	_____	_____	_____
Central Peripherals	_____	_____	_____
User Terminals	_____	_____	_____
Number of Locations	_____	_____	_____

14. What are the attitudes within your firm toward in-house timesharing?

	<u>ATTITUDE*</u>	<u>COST</u>	<u>SOFTWARE CONTROL</u>	<u>CONTROL OVER SYSTEM DEVELOPMENT</u>
Corp. Mgt.	_____	_____	_____	_____
User Dept.	_____	_____	_____	_____
DP Dept.	_____	_____	_____	_____

*5 = Strongly favorable; 3 = Neutral; 1 = Strongly against

15. What do you see as the general trends in the timesharing industry?

APPENDIX G: FINANCIAL PLANNING: USER QUESTIONNAIRE

USER QUESTIONNAIRE

(Aimed at Financial Planning Director
and/or key subordinate)

FINANCIAL PLANNING

- I. Are you and involved in other activities besides financial planning? Describe.

- 2a. Do you perform both long range and short range planning?

- 2b. What do you see as the main distinctions between long and short range planning?

<u>FACTOR</u>	<u>LONG RANGE</u>	<u>SHORT RANGE</u>	<u>COMMENT</u>
Time frame			
Top management involvement			
Importance to firm			
Accuracy			
Analytic tools			
Computerized assistance used			
Level of detail			
Other			

3. For what financial functions do you use computer assistance and which do you perform manually? (Don't prompt unless needed for clarification)

	<u>USE</u>	<u>COMP- UTER</u>	<u>MAN- UAL</u>	<u>OTHER (e.g., DESKTOP CALCULATOR)</u>
Long range planning	_____	_____	_____	_____
Short range planning	_____	_____	_____	_____
Capital budgeting	_____	_____	_____	_____
Operating budgeting	_____	_____	_____	_____
Investment analysis	_____	_____	_____	_____
Cash management	_____	_____	_____	_____
Cash requirements forecasting	_____	_____	_____	_____
Source and use of funds	_____	_____	_____	_____
Market planning	_____	_____	_____	_____
Sales forecasting	_____	_____	_____	_____
Facilities planning	_____	_____	_____	_____
Merger/acquisition analysis	_____	_____	_____	_____
Lease/buy	_____	_____	_____	_____
Consolidations	_____	_____	_____	_____
Pro forma	_____	_____	_____	_____
Foreign exchange	_____	_____	_____	_____
Other _____	_____	_____	_____	_____

4a. Please estimate your department's current (1981) EDP expenditures (for financial planning):

- Outside remote computing service(s).
- Software.
- Consulting.
- In-house charges.

4b. What real rate of increase (i.e., ignoring inflation) do you see for:

- 1982.
- By 1985 (either average annual growth rate or change over 1981).
- Why?

5. Which particular computerized financial planning systems do you use? For each:

- Name.
- Functions performed.
- Vendor/In-house.
- Cost.
 - Initial.
 - On-going.
- Reason for selecting.

- Time to develop/install.
- Date installed.
- Modifications since installaiton.
- Satisfaction. (5 = High, 3 = Medium, 1 = Low) and reason.
- Plans for change.
- Type of product.
 - Remote Computing Service. _____
 - In-house Time Sharing. _____
 - Standalone minicomputer. _____
 - Batch/Remote Job Entry. _____
 - Other. _____

6. What other financial planning software products have you considered using?
Why haven't you acquired/used them?

7. Please give me an idea of the scope/importance of long range planning to
your firm? (NOTE: Long range planning defined as planning with greater
than a five year horizon.)

- Number of man-years devoted to it annually.
 - Professional.
 - Other.

- To what extent is long range planning mathematical and scientific?
 - General approach.
 - Manual portions.
 - Computerized portions.
- What is the amount of top management involvement.
 - High/low.
 - CEO involvement.
 - Other senior management involvement.
- Successes/failures.
 - Reasons.
- How unique do you feel your needs are?
- Extent of outside assistance (consultants, software vendors).
- 8. Which particular features would you find most important in meeting your financial planning needs and why? (5 = must have; 4 = very important, 3 = important; 2 = desirable; 1 = don't care)
 - Deterministic (base case plus sensitivities) analysis (ability to run a model inserting certain assumptions, e.g., a 10% inflation rate in 1985)._____
 - Probabilistic (decision) analysis._____
 - Interactive system (rather than batch); "what if" analysis._____
 - Time series functions, curve fitting. _____
 - Risk analysis. _____

- User-defined logic. _____
 - Standard financial functions (e.g., discounted cash flow) _____
 - Multi-divisional consolidation. _____
 - Graphics outputs. _____
 - User-generated reports. _____
 - Standard reports. _____
9. What significant changes do you expect to make in your long range financial planning in the next five years? In general, do you see it becoming more important?
- _____
- _____
- _____
- _____
- In the scope of long range planning?
- _____
- _____
- In the extent of computerization?
- _____
- _____
- Reasons.
- _____
- _____
- Do you expect to use outside assistance (e.g., consulting, software) in doing this?

10. What are the most important factors in selecting a financial planning computer system/service?

(Rank on a scale from: 5 = high importance; 3 = medium; 1 = low)

	<u>TIME SHARING</u>	<u>SOFT- WARE</u>	<u>REASON</u>
Processing cost	_____	_____	_____
Purchase price	_____	_____	_____
Forecasting techniques and reporting capabilities in general	_____	_____	_____
Statistical system	_____	_____	_____
Local support by vendor	_____	_____	_____
Consulting assistance	_____	_____	_____
Training	_____	_____	_____
Existence of a user group	_____	_____	_____
Documentation	_____	_____	_____
Vendor size	_____	_____	_____
General reputation of vendor	_____	_____	_____
References of current customers	_____	_____	_____
Number of current customers	_____	_____	_____
Time & effort needed to implement	_____	_____	_____
Software reliability	_____	_____	_____
Flexibility	_____	_____	_____
Usability by non-DP personnel	_____	_____	_____
Other. _____	_____	_____	_____

11. What type of supplier of financial planning consulting and software in the list below would you feel comfortable in doing business with? (5 = very comfortable; 3 = comfortable; 1 = uncomfortable).

<u>VENDOR TYPE</u>	<u>COMFORT LEVEL</u>	<u>REASON</u>
Big 8 firm	_____	_____
A specialist financial planning consulting firm	_____	_____
A DP services firm that also offered a wide variety DP services in addition to financial planning software	_____	_____
A timesharing vendor	_____	_____
A subsidiary of a company in your own industry who offered consulting and software	_____	_____
A computer hardware manufacturer	_____	_____

12. Who in your firm would perform the evaluation and make the recommendation for acquiring consulting and software for a long term planning system? Who makes the final decision?

Evaluates.

Recommends.

Final decision.

APPENDIX H: FINANCIAL PLANNING SOFTWARE VENDORS INTERVIEWED

APPENDIX H: FINANCIAL PLANNING SOFTWARE VENDORS INTERVIEWED

- ADR (Empire)
- Economic Science Corporation (EMS)
- Execucom (IFPS)
- Management Decision Systems (Express)
- MDCR, Inc. (Impact)
- PAC Systems (IPAC)

APPENDIX I: FINANCIAL PLANNING: VENDOR QUESTIONNAIRE

FINANCIAL PLANNING VENDOR QUESTIONNAIRE

I. What Financial Planning Information Systems/Services do you currently offer that support long range planning?

Name of product/service.

How does it support long range planning.

Number of users (names).

Significant features/uses.

Cost.

2. What advantages does your product have over other products?

	<u>NAME</u>	<u>ADVANTAGES</u>
Other vendors.	_____	_____
In-house systems.	_____	_____

3. Who do you see as being the leading competition in supplying long range planning systems and associated support?

<u>NAME</u>	<u>MARKET SHARE</u>	<u>REASON</u>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>

4. Do you have plans for offering additional products/services to support long range planning? What and why?

5. What size companies use long term planning software?

- () Fortune 500/50 () Fortune 1000/100
() Other. _____

Banks	<hr/> assets	Insurance	<hr/> sales
		Manufacturing	<hr/> sales
Retail	<hr/> revenues	Transportation	<hr/> sales
		Distribution	<hr/> sales
Services	<hr/> revenues	Finance	<hr/> sales
Other	<hr/> revenues	Other	<hr/> sales

6. Do you see more or less importance of long range planning for companies, as opposed to five years ago?

Why?

Do you expect this to change in the next five years?

7. Which particular features are most important to users? (5 = must have; 4 = very important, 3 = important; 2 = desirable; 1 = don't care)

Deterministic (base case plus sensitivities) analysis. _____

Probabilistic (decision) analysis. _____

Interactive (rather than batch), "what if" analysis. _____

Menu driven. _____

Multi-divisional capabilities. _____

User-generated reports. _____

8. What are the most important factors in a company selecting a financial planning computer system/service in your perception?

(Rank on a scale from: 5 = most important; 1 = least important)

Processing cost	_____
Purchase price	_____
Forecasting techniques and reporting capabilities in general	_____
Statistical interface	_____
Local support	_____
Graphics capabilities	_____
Consulting	_____
Training	_____
User group	_____
Documentation	_____
Vendor size	_____
General reputation of vendor	_____
References of current customers	_____
Number of current customers	_____
Time & effort needed to implement	_____
Software reliability	_____
Flexibility	_____
Usability by non-DP	_____
Other. _____	_____

9. How important is it to offer professional consulting services in conjunction with Financial Planning Computer Services?

() Unimportant () Moderately important
() Very important

Remarks:

